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Meeting the Cool Neighbours I: Nearby stars in the NLTT Catalogue - Defining the sample

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ABSTRACT

We are currently undertaking a program aimed at identifying previously-unrecognised late-type dwarfs within 20 parsecs of the Sun. As a first step, we have cross-referenced Luyten's NLTT proper motion catalogue against the second incremental release of the 2MASS Point Source Catalogue, and use optical/infrared colours, derived by combining Luytens's m_r estimates with 2MASS data, to identify candidate nearby stars. This paper describes the definition of a reference sample of 1245 stars, and presents a compilation of literature data for over one-third of the sample. Only 274 stars have trigonometric parallax measurements, but we have used data for nearby stars with well-determined trigonometric parallaxes to compute colour-magnitude relations in the (M_V, (V-K)), (M_V, (V-I)) and (M_I, (I-J)) planes, and use those relations to determine photometric parallaxes for NLTT stars with optical photometry. Based on the 2MASS JHK$_S$ data alone, we have identified a further 42 ultracool dwarfs ((J-K$_S$ > 0.99) and use (J-K$_S$) colours to estimate photometric parallaxes. Combining these various techniques, we identify 308 stars with formal distances of less than 20 parsecs, while a further 46 have distance estimates within 1σ of our survey limit. Of these 354 stars, 75, including 39 of the ultracool dwarfs. are new to nearby star catalogues. Two stars with both optical and near-infrared photometry are potential additions to the immediate Solar Neighbourhood, with formal distance estimates of less than 10 parsecs.

Subject headings: stars: late-type dwarfs; Galaxy: stellar content

1. Introduction

The scientific bases for completing a thorough survey of the constituents of the immediate Solar neighbourhood can be grouped under two main categories: the identification of individual representatives of particular stellar types for detailed follow-up observation, and the compilation and analysis of statistical parameters. As individuals, the nearest stars provide the brightest examples of a particular class, and therefore permit the most exhaustive scrutiny of physical characteristics, and of how those characteristics vary from star to star. Indeed, it is worth noting that the fact that there are differences in the properties of individual stars became apparent with the completion of the first successful determinations of stellar parallax: Henderson's (1839) analysis of Cape measurements found both components of α Centauri to be similar in brightness to the Sun, but Bessel's (1836) earlier results showed that the fainter star in 61 Cygni is ~ 35 times fainter than the Sun, while Struve's 1840 observations indicated that Vega is brighter than the Sun by a similar factor.

From a statistical point of view, the scientific justification for compiling a catalogue of the nearest stars is summarised succinctly by Kuiper (1942). Besides probing the details of stellar evolution through their distribution in the Hertzsprung-Russell diagram, the nearest stars provide the basis for the determination of the stellar luminosity function, the mass-luminosity relation, the stellar contribution to the local mass density, the velocity distribution and the stellar multiplicity statistics (including the frequency of occurence of planetary systems). Supplementing the photometric and astrometric data with chemical abundance determinations, the nearby stars can be used to map the metallicity distribution of the (local) Galactic disk. Finally, with the addition of age estimates, these stars can probe the local star formation history, and the variation of stellar kinematics (and other parameters) as a function of time.

Success in pursuing Kuiper's research agenda rests on the availability of a well-defined, representative sample of the local stellar populations. At the time, no such dataset existed - the most complete sample of nearby stars was van de Kamp's (1940) catalogue of 34 systems within 5 parsecs of the Sun. Considerable advances have been made in the succeeding three score years, notably through the efforts of Gliese (1957, 1969), later in collaboration with Jahreiß (Gliese & Jahreiß, 1979; Jahreiß & Gliese, 1991), in compiling results from follow-up observations of nearby-star candidates identified from a variety of sources. The most recent catalogue, the preliminary version of the Third Catalogue of Nearby Stars (Jahreiß & Gliese, 1991, hereinafter pCNS3), lists over 3800 stars with nominal distances of less than 25 parsecs, although quantitative spectroscopy (Reid *et al.* - PMSU1, 1995; Hawley *et al.*, 1996 - PMSU2) and astrometry show that many stars lie beyond that distance limit[1]. The Hipparcos mission (ESA, 1997) has solidified the local sample of solar-type stars, but provides data for only a limited subset of stars fainter than 9th magnitude ($M_V = 7.5$, or spectral type M0, at 20 parsecs). Thus, while the number of known nearby systems

[1]Updated measurements for the pCNS3 stars, together with observations of additional, post-Hipparcos nearby star candidates, are included in the CNS website at *http://www.ari.uni-heidelberg.de/aricns/*. The PMSU data are available at *http://dept.physics.upenn.edu/ inr/pmsu.html*.

has increased by two orders of magnitude, the current M dwarf census becomes significantly incomplete at distances beyond 10 parsecs. Estimates of the level of incompleteness vary, ranging from 30-50% for early and mid-type M dwarfs to over 75% at the latest spectral types (PMSU1; Henry, 1998).

The NASA/NSF NStars initiative was designed, at least partly, with the aim of remedying this notable defect in our knowledge. Working under these auspices, we are undertaking a wide-ranging project which aims to use data from the 2-Micron All Sky Survey (2MASS), in combination with other large-scale surveys and databases, to identify previously-unrecognised late-type dwarfs within the immediate Solar Neighbourhood. The near-infrared coverage offered by 2MASS is ideally suited to detecting and classifying nearby cool dwarfs; indeed, 2MASS (Skrutskie *et al.*, 1997) and the companion DEep Near-Infrared Survey (DENIS - Epchtein *et al.*, 1994), are responsible for discovering the overwhelming majority of the ultracool low-mass stars and brown dwarfs which have been used to define the new spectral classes L (Kirkpatrick *et al.*, 1999; Martín *et al.*, 1999) and T (Burgasser *et al.*, 2001; Geballe *et al.*, 2001).

The prime goal of our project is the identification of all M and L dwarfs within 20 parsecs of the Sun. The near-infrared colours provided by 2MASS are sufficient to identify late-type M and L dwarfs, but are essentially degenerate for mid-K to M7 dwarfs. Thus, achieving our goal demands that we employ a variety of techniques, combining a range of observational strategies. Future papers in this series will discuss the application of purely photometric selection effects (Cruz *et al.*, in preparation), but first we concentrate on a variation on a more traditional theme - 2MASS photometry of stars in the New Luyten Two-Tenths (NLTT) catalogue (Luyten, 1980). Section 2 outlines the relevant characteristics of the NLTT survey. Section 3 describes the selection criteria we have used to identify nearby-star candidates, combining the NLTT data with the photometry from the second incremental release of the 2MASS point-source catalogue. Section 4 describes the calibration of photometric parallax; section 5 summarises the data available in the literature for a subset of those sources, and identifies stars likely to lie within our distance limit of 20 parsecs; section 6 summarises the results.

2. The NLTT catalogue and nearby stars

Proper motion has a well proven track record as a means of identifying nearby stars. As members of a rotationally-supported, low velocity dispersion system, most[2] disk dwarfs have heliocentric space motions of less than 50 km s^{-1}. Thus, the majority of high proper-motion stars are members of the immediate Solar Neighbourhood - the remainder are high-velocity members of the Galactic halo. Proper motion determination is also straightforward; measurements can be made for all stars in a particular region of the sky using wide-field images taken at only two epochs.

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[2]but not all - see Reid, Sahu & Hawley, 2001.

The most extensive proper motion catalogues currently available are due to Willem Luyten, based primarily on his work with the 48-inch Palomar Oschin Schmidt. Attention has mainly centred on the Luyten Half-Second (LHS) catalogue (Luyten, 1979), which includes 3601 stars with $\mu \geq 0.5$ $''$yr^{-1} (and data for a further 869 stars with lower proper motions). This partly reflects the substantial annual motions of those stars, indicative of either close proximity or high space motion, sometimes both, but also partly reflects the fact that those stars are relatively easy to identify. Luyten & Albers (1979) produced the LHS Atlas, which includes finding charts for all of the fainter LHS stars. The NLTT catalogue, including 58845 stars with $\mu \geq 0.18$ $''$yr^{-1}, lacks a comparable identification aid. While the majority of NLTT stars have positions accurate to a few arcseconds, errors exceeding 15 arcseconds are not uncommon. In searching for the latter targets, astronomers have been known to resort to techniques such as using blue and red filters on telescope acquisition systems as blink comparators, picking out the reddest (or, for white dwarf candidates, bluest) star in the field. Such methods are far from efficient, and tend to discourage detailed follow-up observations of extensive target lists at larger telescopes.

Luyten's proper motion surveys also offer the disadvantage of low accuracy photometry (sometime based on by-eye estimates), ill-defined completeness limits and non-uniform sky coverage. The regions of the celestial sphere accessible from the northern hemisphere were surveyed in the early 1960s using the Palomar Schmidt, with the original Palomar Sky Survey (POSSI: Minkowski & Abell, 1963) providing first epoch data. The plates provide both red (m_r) and blue (m$_{pg}$) magnitude estimates, accurate to ± 0.5 mag. and with m$_{pg} \sim B$, $m_r \sim R_K + 0.8$ (Gliese & Jahreiß, 1980; Dawson, 1986). The faintest stars catalogued have $m_r \sim 19$ and m$_{pg} \sim 20.5$.

South of $\delta = -33^o$, both the LHS and NLTT catalogues are derived primarily from the Bruce Proper Motion survey, which is based on photographic plates taken with the Harvard 24-inch Bruce refractor. The first epoch southern hemisphere plates were taken between 1896 and 1910, when the telescope was located in Arequipa, Peru; Luyten obtained second epoch plates between 1927 and 1929, when both he and the telescope were stationed at Harvard's Bloemfontein Observatory in South Africa. Although the Bruce survey extends to a proper motion limit of 0.1 $''$yr^{-1}, it provides only blue-band photographic photometry, and includes few stars fainter than m$_{pg} \sim 15.5$.

The absence of deep photographic material at southern declinations is an obvious limitation in searching for low luminosity dwarfs. However, even the Palomar data provide far from uniform coverage. The high proper motion stars in the NLTT are drawn from a relatively small volume, centred on the Sun, so we expect a uniform distribution over the celestial sphere. Figure 1 plots the (α, δ) distribution of NLTT dwarfs for three magnitude ranges: $11 < m_{pg} < 14$; $14 < m_{pg} < 15.5$; and $15.5 < m_{pg} < 16$. Two features are evident: first, the transition from Palomar Schmidt data to the Bruce survey, obvious at the faintest magnitudes, but also discernible at intermediate magnitudes; and, second, the Milky Way. The high star density close to the Plane leads to confusion (overlapping images) at magnitudes well above the POSS I plate limits, and to difficulties in correctly associating first and second epoch images of moving objects. It is clear from Figure 1 that at low latitudes, with the exception of a few regions (such as the Perseus-Auriga region, $\alpha \sim 5$ hours,

$40^o < \delta < 50^o$), the NLTT catalogue has effectively the same limiting magnitude as the Bruce survey.

The number-magnitude distribution of NLTT stars at higher Galactic latitudes is illustrated in Figure 2, where we also show the distribution of LHS stars in the same regions. As discussed by Flynn *et al.* (2001), if the kinematics of a stellar population are invariant over the sampling volume, then the number of stars in a proper-motion limited survey varies with μ_{lim}^{-3} (since the distance limit, d_{lim}, is inversely proportional to μ_{lim}). The characteristic distance of a proper motion star also scales inversely with μ_{lim}, so the typical distance modulus for the catalogue scales as μ_{lim}^{-2}. Thus, if we compare the number-magnitude distributions of two unbiased proper-motion surveys, S_1 and S_2, with proper motion limits of μ_1 and μ_2, the sampling volumes scale as

$$\frac{\mathrm{Vol}_2}{\mathrm{Vol}_1} \;=\; f_v \;=\; (\frac{\mu_1}{\mu_2})^3$$

and the relative distance modulus is

$$(m-M)_2 - (m-M)_1 \;= \delta(m-M) \;=\; 5\log\frac{\mu_1}{\mu_2}$$

We need to allow for the change in average distance modulus to ensure we are matching stars of similar absolute magnitude. Thus, in comparing the number counts, we expect

$$N_2(m) \;=\; f_v \times N_1(m - \delta(m-M))$$

In the specific case of the LHS and NLTT surveys, $\mu_1 = 0.5\ ''\mathrm{yr}^{-1}$ and $\mu_2 = 0.18\ ''\mathrm{yr}^{-1}$, so if there are no other selection biases, we expect

$$N_{NLTT}(m) \;\approx\; 21 \times N_{LHS}(m - 2.2)$$

Dawson (1986) estimates that the LHS survey is complete at the 90% level for $m_r < 18$ and $|b| > 10^o$. The LHS therefore provides a reference to $\sim$ 20th magnitude for the NLTT catalogue. As Figure 2c shows, scaling the number counts from the two surveys gives a ratio close to the predicted value for m_r(NLTT) brighter than $\sim$ 16th magnitude, with the ratio dropping by $\sim$ 20% between 16th and 18th magnitude. This suggests that the NLTT may be complete only at the 75% level at the latter magnitudes.

Despite these limitations, the NLTT catalogue remains a powerful resource for searching for new candidate stars within 20 parsecs. A proper motion limit of 0.18 $''\mathrm{yr}^{-1}$ corresponds to a transverse velocity of ~ 17 km s^{-1} at 20 parsecs; simple Monte Carlo simulations based on standard disk kinematics (PMSU2) show that over 85% of nearby stars should exceed this limit. Thus, while there is no possibility of using the NLTT to construct a complete census of nearby late-type dwarfs, detailed follow-up observations can produce substantial additions to the number of early- and mid-type M dwarfs known to lie within 20 parsecs of the Sun. The 2MASS database makes those follow-up observations possible.

3. The NLTT and 2MASS

3.1. Matching the NLTT catalogue against the 2MASS database

In the near future, 2MASS will provide broadband J, H and K_s photometry for sources over the full celestial sphere. The J and H passbands match the standard Johnson system, while the K_s passband, truncated at long wavelengths to avoid terrestial H_2O absorption, is described and calibrated by Persson *et al.* (1998). The effective wavelength of the K_S filter is 2.15μm, as opposed to 2.19μm for the standard system, but Carpenter's (2001) analysis reveals only minor differences with respect to standard systems. In particular, Carpenter finds

$$K_S(\mathrm{2MASS}) \;=\; K_{CIT} \;-\; 0.024, \qquad 0 < (J - K_S) < 2.9$$

and

$$K_S(\mathrm{2MASS}) \;=\; K_{UKIRT} \;+\; 0.004(J - K_S) \;+0.002, \qquad -0.2 < (J - K_S) < 3.8$$

These differences are negligible compared with other sources of uncertainty in the present analysis, and we adopt the convention K_S=K in this series of papers.

The 2MASS catalogue includes sources which have a signal-to-noise ratio exceeding 7, corresponding to typical limiting magnitudes of J$\sim$ 16.1, H$\sim$ 15.2 and $K_s \sim 14.9$ in uncrowded fields. M dwarfs within 20 parsecs have near-infrared magnitudes significantly brighter than these limits - for example, even an M9.5 dwarf, comparable to BRI0021 or LP 944-20, has $M_K \sim 11.1$, or $K_s \sim 12.6$ at a distance of 20 parsecs. At those magnitudes, the typical photometric uncertainties are 0.02-0.04 magnitudes.

2MASS survey observations were completed in early 2001, but at the time of writing, data are available publicly for only 46.5% of the sky via the second incremental release. The results described in this paper, and in subsequent papers in the series, rest on the latter dataset. In addition to photometry, the catalogue provides astrometry for each source, accurate to $< 1''$; morphogical information, allowing segregation of extended and point sources; and a number of data quality flags, identifying artefacts and potentially confused (in the crowding sense) objects.

Despite the reservations concerning the NLTT astrometry noted in the previous section, positional coincidence is the most effective method of cross-referencing the proper motion catalogue against the 2MASS database. We have applied proper motion and precession corrections to the NLTT data to transform the co-ordinates to epoch 1998.0 (approximating the mean epoch of the data in the 2MASS second incremental release) and equinox J2000.0. We have cross-referenced this search list against the 2MASS database using the 'GATOR' tool provided by Infrared Science Archive (IRSA[3]), setting a search radius of $10''$and including only non-extended sources. Given the discussion in the previous section, we have also excluded all NLTT dwarfs within 10 degrees of

[3]http://irsa.ipac.caltech.edu/

the Galactic Plane. Of the 58845 source in the NLTT catalogue, 23795 (40.4%) have at least one 2MASS source within the $10''$search radius; approximately 1400 have two or more matches, giving a total of 25305 potential near-infrared counterparts to the proper motion stars.

This dataset provides the basis for constructing our primary NLTT sample of nearby star candidates. However, it does not include all of the NLTT stars within the area covered by the currently-available 2MASS data. We identified those objects by removing the matched NLTT stars from the search list, and re-running the database query, but with a search radius of 60 arcseconds. A total of 4875 additional NLTT stars (8% of the catalogue) have potential 2MASS counterparts at those larger separations[4]. Figure 3 plots the (α, δ) distribution of the two datasets. It is clear that the wide-paired NLTT stars (the 4875 stars) are not randomly distributed: there are obvious concentrations, notably near the North Celestial Pole and near the Sorth Galactic Pole $(\alpha \sim 1^h, \delta \sim -30^o)$. It is likely that these features stem from systematic errors in the NLTT positions in those regions.

Figure 3 highlights two issues: first, as already discussed, a sizeable subset (20%?) of the stars in the NLTT catalogue have astrometry of only modest accuracy; second, even though 23795 NLTT stars have 2MASS sources within $10''$, there is no guarantee that those sources include the NLTT star itself. Thus, just as the NLTT catalogue includes only an incomplete subset of late-type dwarfs with 20 parsecs, our cross-referencing against the 2MASS database succeeds in identifying only a subset of the nearby late-type dwarfs in the NLTT. We will discuss the 4875 sources in the NLTT wide-matched sample in a later paper in this series; for the present, we concentrate on the sample of 23795 NLTT dwarfs with 2MASS counterparts within $10''$of the predicted J2000 positions.

3.2. Colour selection of candidate nearby stars

Clearly it is unreasonable to attempt detailed follow-up observations of all 25000+ potential NLTT/2MASS pairings. However, we can use Luyten's m_r photometry to pare the sample to a manageable size. Dawson's (1986) analysis of data for over 2000 LHS stars confirmed Gliese & Jahreiß' (1980) calibration of m_r against standard Kron R_K photometry, deriving

$$m_r \ = \ R_K \ + \ 0.80$$

The (R_K-K_s) colour spans a long baseline in wavelength, and ranges from ~ 3.0 at spectral type M0 to ~ 6.6 at spectral type M8. Thus, even with uncertainties of ± 0.5 magnitude in m_r, the location of a star in the (m_r, (m_r-K_s)) plane can discriminate between a relatively distant early-type M dwarf and an M6 dwarf in the immediate Solar Neighbourhood.

Figure 4 illustrates how we have defined our selection criteria. Since m_r is a poorly-defined photometric system, with a passband limited to the blue half of more conventional R passbands, we

[4]A further 853 NLTT stars with $-10^o < b < 10^o$have 2MASS counterparts.

have not attempted to transform data from standard photometric systems to define a calibration sequence. Instead, we define the sequence directly, using photometry listed in the NLTT catalogue for nearby stars with accurate trigonometric parallax measurements. The near-infrared data for those stars are taken either from Leggett's (1992) compilation or from the 2MASS survey itself. Figure 4 plots these data, where the magnitudes are adjusted to match a distance of 20 parsecs. As expected, there is considerable scatter, so rather than fit a mean relation, we have defined a series of linear relations which underlie the overall distribution. These provide a set of conservative criteria, erring towards including stars lying beyond the 20-parsec limit, rather than excluding nearby stars with particularly errant photometry. The relations are as follows:

$$m_r(lim) = 2.17(m_r - K_s) + 3.65, \quad (m_r - K_s) \leq 4.3$$

$$m_r(lim) = 5.25(m_r - K_s) - 9.58, \quad 4.3 < (m_r - K_s) \leq 4.7$$

$$m_r(lim) = 1.48(m_r - K_s) + 8.15, \quad 4.7 < (m_r - K_s) \leq 7$$

We set a lower limit of $(m_r - K_s) = 3.5$, corresponding to (R-K_s) $\sim$ 2.7, or spectral type $\sim$K5, and include all matches with $(m_r - K_s) > 7$. NLTT/2MASS pairings are eliminated from our candidate list if $m_r > m_r(lim)$. Applying these selection criteria reduces the NLTT sample by almost 95%, from 25305 pairings to only 1434 candidates.

3.3. NLTT binaries and extreme colours

Over 2300 stars in the NLTT catalogue are identified in the notes as probable common proper-motion (cpm) companions of brighter stars. A substantial fraction of those systems have separations of less than 20″. Our cross-referencing against the 2MASS database is based only on positional coincidence, so it is possible for an NLTT binary to produce four pairings: two correct matches, [NLTT(A)+2MASS(A)] and [NLTT(B)+2MASS(B)]; and two mismatches, [NLTT(A)+2MASS(B)] and [NLTT(B)+2MASS(A)]. Of the two mismatches, the latter is more important for present purposes, since it pairs the fainter optical source against the brighter infrared source, giving the reddest possible $(m_r - K_s)$ colour. Those sources are most likely be included in our list of nearby-star canddiates.

We dealt with this possible source of contamination through visual inspection (via IRSA) of the 2MASS images of the cpm companions included in our candidate list. Since Luyten's notes give the position angle for each system, it is straightforward to determine whether the 2MASS position corresponds to the correct component. Based on that comparison, we have eliminated a further 161 pairings, reducing our primary NLTT sample to 1273 candidates and eliminating many of the apparently reddest stars in the sample (Figure 5).

3.4. Near-infrared colours

Finally, we have examined the photometric properties of 2MASS sources to check their consistency with both the $(m_r - K_s)$ colours and known properties of late-type dwarfs. Figure 6 plots the $((m_r - K_s)$, (J-K$_s$)) and ((J-H), (H-K$_s$)) two-colour diagrams for the 1273 NLTT/2MASS pairings which survive as nearby-star candidates. The overwhelming majority have colours consistent with those expected for M dwarf stars, but there is a small number of outliers. In particular, 20 sources have near-infrared colours more consistent with either earlier-type (G, K) main sequence stars or red giants, while a further eight have non-stellar JHK colours. Figure 6 shows that most of the outliers in the JHK plane (where we have more accurate photometry) are also discrepant in the optical/near-infrared two-colour diagram; in particular, the 2MASS sources with early-type near-infrared colours have faint NLTT counterparts, and correspondingly red $(m_r - K_s)$ colours. Visual inspection confirms that both these objects and the candidates with red-giant JHK colours are mismatches, and we have eliminated them from the sample.

The unusual colours of the remaining outliers can be attributed to an error in one band of the 2MASS photometry, in some cases probably due to confusion. For completeness, Table 1 lists relevant data for these objects. All are known nearby stars, and at least four lie within 20 parsecs of the Sun.

3.5. Summary: NLTT Sample 1

With the elimination of mismatches and stars with unreliable photometry, our primary sample of NLTT nearby star candidates includes 1245 sources. We will refer to these stars as NLTT Sample 1. Figure 7 plots the number-magnitude distribution for the sample, while Figure 8 plots the distribution on the celestial sphere. A relatively small proportion of the sample have faint magnitudes, with most stars lying between 11th and 15th magnitude and over half brighter than $m_r = 14$. More detailed follow-up observations of the latter stars can be obtained in a relatively straightforward manner using small telescopes. Indeed, such data are already in hand for a significant fraction of the sample, and these data are discussed in the final sections of this paper. Paper II in this series presents BVRI photometry for 180 of the brighter southern stars in the sample (Reid, Kilkenny & Cruz, 2001), while Paper III (Cruz & Reid, 2001) discusses low-resolution spectroscopy of seventy of the fainter NLTT stars.

4. Photometric parallax calibration

The prime goal of our NStars project is identifying stars within 20 parsecs of the Sun. Given the accuracy possible in current astrometric work (better than 1 milliarcsecond), trigonometric parallax measurements offer the most reliable distance estimates. However, acquiring the necessary

astrometric observations remains a time consuming process. Photometric parallaxes, derived by estimating the absolute magnitude based on measurement of appropriate colours, are much simpler to obtain. The main disadvantage is that, since absolute magnitude is calibrated based on a mean relation, the pgotometric method takes no account of intrinsic scatter in the HR diagram, due, for example, to abundance variations or unrecognised binarity. Moreover, a mean relation can smooth over abrupt changes in slope in the main-sequence, leading to systematic under- or over-estimates of absolute magnitude in a particular colour range. Nonetheless, if one bears those caveats in mind, photometric parallax estimates can be used to further refine the list of nearby-star candidates.

4.1. Calibrating the main sequence for nearby stars

We have chosen three colour indices for calibration purposes: (V-K) is the longest baseline colour index available for most stars in the sample; (V-I), where I is on the Cousins system, is widely used as an optical distance indicator; and (I-J) was identified as the cleanest optical/near-infrared colour index by Leggett *et al.* (1996). We have calibrated the mean relations using data from three main sources: Leggett's (1992) compilation of UBVRIJHK photometry of nearby K and M dwarfs; a combination of Bessell's (1990) BVRI data and 2MASS JHK$_S$ photometry for stars from the second Catalogue of Nearby Stars (Gliese, 1969, and Gliese & Jahreiß, 1979; hereinafter, CNS2); and Dahn *et al's* (2000) optical and near-infrared photometry of ultracool M and L dwarfs. All of the stars have trigonometric parallax measurements, derived from either Hipparcos (ESA, 1997) or USNO observations (Monet *et al.*, 1992 and references therein), accurate to better than 10%; in most cases, the accuracy exceeds 5%, rendering statistical Lutz-Kelker corrections of negligible proportion. Finally, all known binaries and halo subdwarfs (e.g. Gl 191, Kapteyn's star) have been excluded from the sample, together with a few additional stars which lie significantly above or below the main body of the data. These calibrators should therefore provide a reliable estimate of the mean location of the main sequence in the local Galactic disk.

Figure 9 plots the colour-magnitude distribution of main-sequence stars in the (M$_V$, (V-K)) plane. We have derived a mean relation by fitting a sixth order polynomial,

$$\begin{aligned} M_V &= -30.36 + 44.34(V-K) - 21.84(V-K)^2 + 5.600(V-K)^3 - 0.7543(V-K)^4 \\ &\quad + 0.05105(V-K)^5 - 0.001370(V-K)^6, \\ &\qquad 10(V-K) > 2.5,\ \sigma = 0.412 \text{ mag.},\ 198 \text{ stars} \end{aligned}$$

Note the preponderance of datapoints below the mean relation in the colour range $5 < (V-K) < 6$.

Our adopted (M$_V$, (V-I)) calibration is shown in Figure 10. We match the observations using a composite relation, combining the following three polynomials:

$$\begin{aligned} M_V &= -4.415 + 27.62(V-I) - 28.45(V-I)^2 + 14.63(V-I)^3 - 2.967(V-I)^4 \\ &\quad - 0.02758(V-I)^5 + 0.05848(V-I)^6, \qquad 1.0 \le (V-I) < 2.8,\ \sigma = 0.40 \text{ mag.},\ 175 \text{ stars} \end{aligned}$$

$$M_V = 12.20(V-I) - 21.96, \qquad 2.8 \leq (V-I) < 2.9$$

$$M_V = 5.923 + 2.249(V-I) + 0.171(V-I)^2 - 0.01886(V-I)^3,$$
$$2.9 \leq (V-I) < 4.5, \ \sigma = 0.22 \text{ mag., } 29 \text{ stars}$$

As discussed in previous papers (PMSU2; Reid & Gizis, 1997), this tripartite approach is required by the noticeable steepening of the main sequence at (V-I)$\sim$ 2.85.

Finally, Figure 11 plots the (M_I, (I-J)) relation. There is clearly an abrupt change in slope at (I-J)$\sim$ 1.5, and we have derived separate mean relations for the brighter and fainter stars,

$$M_I = 2.879 + 1.635(I-J) + 5.258(I-J)^2 - 4.516(I-J)^3 + 1.632(I-J)^4 - 0.107(I-J)^5,$$
$$0.4 \leq (I-J) < 1.45, \ \sigma = 0.42 \text{ mag., } 194 \text{ stars}$$

$$M_I = 16.491 - 16.499(I-J) + 14.003(I-J)^2 - 4.717(I-J)^3 + 0.697(I-J)^4 - 0.0330(I-J)^5,$$
$$1.65 \leq (I-J) < 4.0, \ \sigma = 0.31 \text{ mag., } 37 \text{ stars}$$

The main sequence is essentially vertical in region of overlap, with an almost even distribution of datapoints over the range ($1.45 < (I-J) < 1.65$, $9.2 < M_I < 11.2$). Rather than attempt to fit a mean relation, we assign an absolute magnitude estimate of $M_I = 10.2 \pm 0.7$ for NLTT stars falling in this colour range.

4.2. Structure in the main sequence

The disk main sequence does not, unfortunately, present a simple linear relation in colour-magnitude diagrams - hence the necessity for the polynomial relations computed in the previous section. Before applying those calibrations to derive photometric parallaxes for the NLTT stars, we briefly consider both the interpretation of the changing slope of the main sequence evident in Figures 9, 10 and 11, and the implications for our analysis.

A change in slope of the main sequence in a colour-magnitude diagram generally reflects either a significant change in the opacity distribution within the individual spectral bands sampled (a local effect), or a significant change in the underlying physical structure (a global effect). The most striking example of the former is the abrupt change in near-infrared (H, K) colours at the transition between spectral types L and T due to the onset of CH_4 absorption at 1.6 and 2.2 μm. In contrast, most of the changes in slope evident in Figures 9-11 likely stem from global effects.

Several notable points of inflection are evident in Figures 9 and 10: at $M_V \sim 8.5$ (spectral type M1), where the main-sequence steepens; at $M_V > 14$ (spectral type M4.5/M5), where the gradient becomes shallower, almost matching the slope at $M_V < 8$; and, less pronounced in (V-K) but nonetheless present, at $M_V \sim 12.5$ (spectral type M3.5/M4), where the the main sequence steepens

sharply. The 'break' in the main-sequence produced by the latter two points of inflection is evident at near-infrared wavelengths at (I-J)$\sim$ 1.5, while PMSU2 and Reid & Gizis (1997) have shown that this feature is also present if one uses TiO bandstrength as a surrogate for colour (effective temperature). We emphasise that the same stars outline the configuration at all wavelengths: thus, Gl 15B (M_V=13.33, (V-I)=2.82, M_I=10.51, (I-J)=1.48, M3.5) is one of the bluest and faintest contributors, while Gl 555 (M_V=12.36, (V-I)=2.86, M_I=9.50, (I-J)=1.59, M4) lies at the opposite extreme. The fact that this feature occurs over such a wide range in wavelength, coupled with the lack of any obvious rapidly-varying spectral features, suggests strongly that this is a global effect, indicative of a significant change in luminosity over a small range in colour (effective temperature). In contrast, the steepening in the (M_V, (V-I)) distribution at $M_V > 18$, behaviour which is not reflected in (V-K), is probably a local effect, marking the presence of substantial TiO and metal hydride absorption in the I-band.

Several theoretical mechanisms are known to modify the shape of the lower main-sequence. At masses below $\sim 0.1 M_\odot$, degeneracy becomes increasingly important, leading to the shallower slope at $M_V > 13$ (D'Antona & Mazzitelli, 1985). On the higher luminosity side of the break, Copeland *et al.* (1970) originally demonstrated that H_2 formation affects the atmospheric temperature structure in late-K and early-M dwarfs. At those temperatures the formation region lies in the convection zone, leading to a shallower adiabatic gradient, a higher luminosity and a higher surface temperature for stars below the threshold mass. Copeland *et al.* place the onset of this effect at $M_{bol} \sim 7$, broadly consistent with the observed change of slope at M_V=8.5. More recent theoretical calculations by Kroupa, Tout & Gilmore (1990), on the other hand, find a lower threshold luminosity, $M_{bol} \sim 9$, or $M_V \sim 11$.

As yet, there is no widely-accepted theoretical explanation for the break in the main-sequence at (V-I)=2.8. Clemens *et al.* (1998) suggest that the feature may be a result of a relatively abrupt decrease in radius, possibly correlated either with the onset of full convection, or an internal change in the structure of the core. In any event, none of the available theoretical models reproduce the observed main sequence at these luminosities. As an illustration, Figures 9, 10 and 11 plot the 5-Gyr isochrone from the solar abundance models calculated by Baraffe *et al.* (1998 - BCAH), together with 5-Gyr isochrones form the more recent DUSTY models (Chabrier *et al.*, 2000). The latter include both grain opacities and an improved TiO line list, although incompleteness in the H_2O line list leads to inaccuracies at near-infrared wavelengths (Chabrier, priv. comm., 2001; see also Reid & Cruz, 2002, for comparison against infrared data for late-type dwarfs).

The BCAH models are a closest to the empirical main sequence in the (M_I, (I-J)) plane, albeit to some extent smoothing over the break at $M_I \sim 10.5$. The extremely red colours at low luminosities reflect the absence of grain opacities in those models; the DUSTY models are clearly a better match to the data. At optical wavelengths, the BCAH models show poorer agreement, falling below the main sequence at $M_V \sim 10$ and remaining 0.5 to 1 magnitudes fainter than the

observations at lower luminosities[5] Again, the DUSTY models are better match the data, reflecting the more extensive TiO linelists, but these models still miss the M3/M4 break in (M_V, (V-I)), while the mismatch at near-infrared wavelengths reflects the H_2O opacity deficiencies. Bedin *et al.* (2001) point out similar discrepancies between theory and observation at lower abundances. As the latter authors emphasise, resolving those discrepancies is important both in interpreting colour-magnitude diagrams, and in establishing reliable theoretical mass-luminosity transformations.

In terms of the present survey, structure in the main sequence has two consequences: first, systematic miscalibration, if the colour-magnitude relation we adopt fails to follow the empirical distribution; second, higher Malmquist bias, and a consequent increased contamination from more distant stars, at colours where the main-sequence is steepest. Both of these biases are likely to be most significant near the break at $M_V = 12$ to 14 ($5 < (V-K) < 5.6$, $1.45 < (I-J) < 1.65$). These effects will be taken fully into account in statistical analysis of the nearby star sample. For present purposes, we simply note the increased uncertainty in photometric parallax for stars of the appropriate colours.

5. Literature data for NLTT Sample 1

We have used the SIMBAD database to cross-reference the NLTT sample against the published literature, checking all potential named counterparts within 1 arcminute of the 2MASS position. The latter step is essential since SIMBAD does not include cross-references to all of the LP names cited in the NLTT, while some stars appear twice (or more) with different names and slightly different positions. Moreover, a significant number of stars in the NLTT catalogue have no associated name - a deliberate choice on Luyten's part. The overwhelming majority of these stars are actually from the Lowell Observatory proper motion survey (Giclas, Burnham & Thomas, 1971). Over 400 stars in the sample as a whole prove to have either photometric or astrometric observations available in the literature.

5.1. Photometry and astrometry

Amongst the 1245 stars in our primary NLTT sample, 648 have at least V-band photometry, of which 469 are considered here (the remaining 180 stars will be discussed in Paper II). Three hundred and forty-two of the 469 are listed in the preliminary version of the third Nearby Star Catalogue (pCNS3, Gliese & Jahreiß, 1991), including a number of known spectroscopic or small angular-separation binary systems. While the latter are not photometric outliers, unlike the stars

[5]This mismatch accounts for the remarkably young age of ~ 30 Myrs. deduced for Gl 229A by Leggett *et al.* (2002). Since the BCAH models fall below the empirical main sequence, the only means of matching the observed luminosity is by reducing the age.

listed in Table 1, photometric parallaxes will lead to underestimated distances, so we have culled those stars from the sample. Data for those systems are listed in Table 2. Table 3 collects published photometry and parallax measurements for the remaining stars. We list the NLTT designation for each, adding the Giclas numbers ignored by Luyten, and give Gl or GJ numbers (as appropriate) as a secondary identification. We have also cross-referenced the sample against the LHS catalogue.

All of the optical photometry included in Table 3 is on the Johnson/Cousins BVRI system. The original RI photometry is taken from sources which use either the Kron or the Kron-Cousins system, since experience has shown that transforming data for M dwarfs from other systems can give unreliable results. We have used the relations given by Bessell & Weis (1987) to transform between the Kron and Cousins systems. The main contributor is Weis, who has obtained optical data for nearly 3000 NLTT stars, including all m-class stars with $\delta > 0^o$ and $m_r < 13.5$ (Weis, 1988 and refs within), together with almost 25% of the LHS catalogue (Weis, 1996). Two hundred and sixty of those stars are included in Table 3. Other sizeable contributions are from Bessell (1990 - BVRI, 46 stars), the Hipparcos catalogue (ESA, 1997 - BV, 43 stars), the pCNS3 (BV - 28 stars) and Sandage & Kowal (1986 - BV, 27 stars). We also include photometry by Ryan (1989), Fleming (1998), Patterson *et al.* (1998) and Eggen (1987).

Figure 12 superimposes photometry for the NLTT stars on the the two-colour ((B-V), (V-K_S)) and ((V-I), (V-K_S)) diagrams outlined by nearby main-sequence stars. In most cases, the data are broadly consistent with the expected distributons, albeit with significantly more scatter in the ((B-V), (V-K_S)) plane. A few stars require special comment:

- LP 335-13 (HIP 91489): the (B-V) colour listed in the Hipparcos catalogue ((B-V)=0.68) is clearly incompatible with both the observed spectral type (M2) and the absolute magnitude inferred from the apparent magnitude and parallax (M_V = 8.71). Since the V magnitude (10.85) is consistent with the NLTT photometry (m_r = 11.0), we adopt that value in computing (V-K_S).
- LP 984-91 (HIP 112312): the V magnitude listed in Table 3 is derived from the Hipparcos H_p measurement, adopting the colour correction appropriate to a mid-type M dwarf. We note that the Hipparcos measurements indicate variability of $\sim$ 0.35 magnitudes.
- LP 653-13 (LHS 176): the optical colours listed in Table 3 (from Dawson & Forbes, 1989) are inconsistent with the both the inferred (V-K_S) and the JHK_S colours, perhaps due to misidentification. Further observations are required, and the (V-K_S) photometric parallax computed here must be regarded as tentative.
- LP 469-50 is clearly identical with G 3-34. Inspection of POSS I and II images, however, shows that the position listed in SIMBAD for the latter star is coincident with a nearby, non-moving star of similar magnitude, lying $\sim$ 2.5 arcminutes NW of the proper motion star. It is not clear which star was observed by Sandage & Kowal, so the (V-K_S) photometric parallax requires confirmation.

- +19:5093B: the (B-V) colour derived by Eggen may be affected by the presence of the nearby 6th magnitude primary star.

The trigonometric parallax data are from two main sources: The Hipparcos cataloge (ESA, 1997 - 141 stars); and the Fourth edition of the Yale parallax catalogue (van Altena *et al.* (1995). Our sample includes a number of fainter components in binary systems which lack direct trigonometric parallax measurements, but where such data are available for the primary star in the system. Of the 469 stars in Tables 2, 3 and 4, 178 lack trigonometric parallax data.

5.2. Distance estimates

We have used the absolute magnitude/colour relations defined in Section 4.1 to estimate distances to each star with photometry in the appropriate passbands. Table 4 lists the results, expressed as distance moduli, and associated uncertainties, ϵ. We have combined the available individual measurements, weighted by the uncertainty, to derive the average photometric parallax, (m-M)$_{ph}$. As discussed in §4, photometric distance estimates cannot take into account the intrinsic dispersion of the main sequence; combining the individual estimates therefore provides a more precise estimate of the average absolute magnitude of a star with the observed colours, rather than a more precise estimate of the distance to a particular star. Trigonometric parallax measurements offer the best method of measuring distances to individual stars, and our dataset includes a substantial number of stars with accurate astrometry. None of those stars are amongst the photometric calibrators used to define the colour-magnitude relations given in §4.1. We can therefore use these additional stars to verify the reliability of those relations.

Including stars from Paper II in this series, we have optical photometry for 253 stars with trigonometric parallaxes measured to a formal accuracy better than 9%. Figure 13 plots the residuals in distance modulus for that, in the sense

$$\delta(\pi - \mathrm{phot}) \;=\; (m-M)_{\pi} \;-\; (m-M)_{phot}$$

as a function of absolute visual magnitude. Table 5 lists the mean residual and the dispersion in residuals for the individual photometric estimates and for the averaged photometric parallax. The rms dispersion is typically 0.3 to 0.4 magnitudes, rising sharply in the M$_V$=13 bin, centred on the main-sequence break discussed in section 4.2, but there is no evidence for a systematic offset.

Table 4 also lists the trigonometric distance estimates. Since the measured uncertainties, σ_π, are symmetric in parallax, the uncertainties in distance modulus are asymmetric. For present purposes, we adopt

$$\epsilon_\pi \;=\; 5\log\frac{\pi}{\pi-\sigma_\pi}$$

and use those values as weights in averaging (m-M)$_\pi$ and (m-M)$_{ph}$. Based on the above discussion and the comparison shown in Table 5, we set a lower limit of $\pm$0.3 magnitudes on the weight

associated with $(m\text{-}M)_{ph}$ to take into account the intrinsic dispersion of the main sequence. This ensures that high-accuracy trigonometric measurements are given due weight, while preserving a self-consistent distance estimation process. Our final adopted estimate of the distance to each star, d_f, and the associated uncertainty, ϵ_d are listed in Table 4.

The last column of Table 4 identifies which stars are likely to lie within 20 parsecs of the Sun. Stars with formal distances $d_f \leq 20$ parsecs are identified as probable inhabitants of the immediate Solar Neighbourhood (Y - 266 stars), while candidates with $d_f - \epsilon_d \leq 20$ parsecs are possible members (? - 46 stars). One hundred and fifty-seven stars have formal distances $d_f - \epsilon_d > 20$ parsecs, and are therefore excluded from our census. Amongst the Solar Neighbourhood members, 43 have formal distances of less than 10 parsecs (identified as Y* in Table 4). While most are well-known, much-studied nearby stars with accurate trigonometric parallax measurements, two stars are potential additions

- G 39-29, with a formal distance of 9.6 ± 1.3 parsecs amd M_K=7.4; no trigonometric data.
- G 180-11, $d_f = 9.3 \pm 1.2$ parsecs and M_K=8.1; no trigonometric data.

Both are listed in the pCNS3, but with higher distance estimates. Accurate trigonometric parallax data are required to confirm the photometric distance estimates.

5.3. Late-type dwarfs

The Solar Neighbourhood census is least complete for stars of low luminosity. Early- and mid-type M dwarfs have near-infrared colours spanning a very small range in magnitude; in particular, (J-K) is essentially constant, at $(J\text{-}K_S) = 0.9 \pm 0.1$ for spectral types K7 to M6. The coolest main-sequence stars, ultracool dwarfs with spectral types later than M6, have sufficiently extreme energy distributions that $(J\text{-}K_S)$ changes significantly with decreasing temperature. We can therefore identify the ultracool dwarfs in our NLTT sample, and use the near-infrared colours to estimate photometric parallax. Gizis *et al.* (2000) have calibrated this relation, deriving

$$M_K \ = \ 7.593 \ + \ 2.25(J - K_S), \qquad \sigma = 0.36 \text{ mag.}$$

valid for spectral types later than M6.5. We have used this relation to estimate distances to NLTT dwarfs in the current sample with $(J\text{-}K_S) > 0.99$. Tables 6 and 7 present the results. Table 6 lists nine dwarfs with previous spectroscopic observations, including LHS 2090, an M6.5 dwarf recently identified as lying within the 8-parsec sample (Scholz *et al.*, 2001); LP 944-20, the nearest isolated brown dwarf (Tinney, 1998); four dwarfs from the ultracool 2MASS sample selected by Gizis *et al.* (1999); and an earlier type dwarf, LP 860-46, which appears coincident with one of the brighter stars in Ardila *et al.'s* (2001) U Sco photometric survey.

Table 7 collects data for a further 42 ultracool dwarfs selected from our current sample based on the 2MASS photometry. We have estimated distances to these dwarfs using the $(M_K, (J\text{-}K_S))$

relation given above. While the majority of these stars have no prior observations, nine dwarfs have optical photometry. Photometric parallaxes derived from the latter data (usually (V-K_S)) indicate larger distances than the (J-K_S) calibration. Indeed, the optically-based distances for the three brightest Giclas stars are a factor of four higher than the near-infrared calibration. These stars probably have spectral types earlier than M6.5, but have near-infrared colours on the red extreme of the (J-K_S) distribution. The agreement between d_f and d_{J-K} is better amongst the fainter (apparent magnitude) stars in Table 7 (which are also likely to have fainter absolute magnitudes), although the near-infrared colour index still tends to give lower distances by $\sim 30\%$. Nonetheless, all of the dwarfs listed in Tables 6 and 7 have formal distances either of less than 20 parsecs, or within 1σ of our distance limit. Of the 51 ultracool dwarfs in Tables 6 and 7, only LP 944-20 has a trigonometric parallax measurement.

6. Summary

Our NStars survey aims to identify late type stars and brown dwarfs lying within 20 parsecs of the Sun. In this first paper, we have concentrated on defining an initial sample of nearby-star candidates from the NLTT catalogue by combining Luyten's red magnitude estimates with near-infrared photomety from the 2MASS database. We also describe a number of techniques which will be used in subsequent papers, both to identify other nearby-star candidates and to estimate their distances.

Cross-referencing our initial sample against the literature, we have located optical photometry for 469 of the 1245 stars. We have also used the near-infrared data provided by 2MASS to identify a further 41 ultracool dwarfs. Most of the stars in the former sample were already known to lie within the immediate Solar Neighbourhood, and are included in the preliminary version of the Third Catalogue of Nearby Stars. Our re-analysis provides improved distance estimates to many of these objects. Three hundred and fifty-six stars listed in Table 3 have formal distances of less than 25 parsecs, the distance limit of the CNS2 and pCNS3; 45 of those stars have no pCNS3 designation. Our analysis also indicates that all 51 dwarfs listed in Tables 6 and 7 (ten stars are included in Table 3) also meet the pCNS3 distance limit. Two hundred and ninety stars from Table 2 and all of the stars in Tables 6 and 7 meet the formal criteria of our own survey, with a more modest distance limit of 20 parsecs. Thirty-seven of the former sample, and 40 of the latter, are additions to the 20-parsec nearby-star census.

Future papers in this series will present more detailed observations of the less well-studied stars discussed in this paper, notably the ultracool dwarfs, and of the remaining 735 stars in our initial NLTT sample. In addition, we will apply the techniques outlined here in analysis of the 4875 NLTT dwarfs which were not included in the parent sample discussed here, but have potential 2MASS matches within 60″.

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Table 1

Photometric outliers

NLTT	α (2000)					δ	m_r	$(m_r - K_S)$	(J-H)	(H-K_S)	π	M_K
G 74-34	02	36	47.8	32	04	20	12.6	4.33	0.72	0.03	65.2 ± 1.5	7.35
GJ 1194B	15	40	03.7	43	29	35	13.0	4.75	-0.37	1.02	74.2 ± 4.8	7.60
LP 229-17	18	34	36.6	40	07	26	11.5	4.42	0.67	-0.55	138 ± 40	
+46:2654	19	16	11.7	47	05	13	11.2	3.54	0.68	-0.32	36.2 ± 1.4	5.45
+48:3952B	23	10	21.4	49	01	02	10.0	3.67	0.31	-0.02	21.6 ± 0.9	3.00
G 273-93	23	38	08.1	-16	14	09	12.3	...	0.60	...	62 ± 18	

Notes:

G 74-34: binary, δV=0.3 mag. (pCNS3), parallax from van Altena *et al.* (1995)

GJ 1194B: parallax from van Altena *et al.* (1995)

LP 229-17: parallax from (M_V, TiO5) relation , spectral type = M3.5 and M_V=12.1 (PMSU1)

+46 2654: HIP 94701; M_K is consistent with spectral type listed in SIMBAD.

+48 3952B: HD 218790B or HIP 114420B. V$\sim$ 10.4; 2MASS photometry possibly affected by primary, V=7.4, $\Delta \sim 4''$, $\theta = 157^o$

G 273-93: parallax from (M_V, TiO5) relation, spectral type = M2 and M_V=10.3 (PMSU1)

Table 2

Close binary stars in the final sample

NLTT	Name	α (2000)				δ		m_r	J	H	K_S	π
+45:4408A	Gl 4A	00	05	40.8	45	48	37	8.9	6.161	···	5.291	88.6 ± 2.3
+45:4408B	Gl 4B	00	05	40.9	45	48	43	9.1	6.117	···	5.259	88.6 ± 2.3
764- 87	GJ 1005AB	00	15	27.9	-16	08	00	10.2	7.205	6.702	6.394	182.1 ± 6.8
-21:1051	Gl 185AB	05	02	28.4	-21	15	23	8.1	···	···	4.586	117.4 ± 1.8
+32:1582	Gl 278C[1]	07	34	37.4	31	52	10	9.1	6.086	···	5.224	74.7 ± 2.5
+15:1957B	GJ 1120B	09	01	17.5	15	15	57	9.5	6.687	6.027	5.914	54.6 ± 3.2
R948/LP735-11		12	28	53.0	-10	39	50	11.0	7.619	7.073	6.788	···
G 63-36/LP438-8	Gl 516 AB	13	32	44.5	16	48	39	11.0	7.643	7.048	6.817	61.5 ± 5.7
+47:2112B	Gl 537B	14	02	33.1	46	20	23	10.1	6.205	5.636	5.397	88.8 ± 3.9
+47:2112A	Gl 537A	14	02	33.2	46	20	26	10.0	6.325	5.637	5.401	88.8 ± 3.9
W 1225	Gl 856AB	22	23	29.0	32	27	33	11.4	6.905	6.300	6.048	62.2 ± 10.0 1
Gl 888AB	G 216-26				23	06	02.2	42 19 45	11.3	8.560	7.900	7.751
-17:6768	Gl 897AB				23	32	46.5	-16 45 08	10.8	6.691	6.070	5.832

Note. — 1. Gl 278C is the well-known eclipsing binary, YY Geminorum.

Table 3. Photometry and astrometry of NLTT stars

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
+44:4548	Gl 2	1014	00 05 10.7	45 47 11	9.8	9.95	1.51	0.97	2.08	1	6.695	6.093	5.848	87.0 ± 1.4	1
G 158-27	GJ 1002	2	00 06 43.2	-7 32 14	13.0	13.83	···	1.59	3.59	11	8.351	7.786	7.448	213.0± 3.6	2
-27:16	Gl 7	1026	00 09 04.2	-27 07 19	11.5	11.68	1.47	0.95	1.90	11	8.642	8.142	7.851	42.8 ± 2.6	1
464- 42	Gl 12	1050	00 15 49.1	13 33 21	12.2	12.60	1.65	1.15	2.56	11	8.615	8.059	7.789	86.6 ± 13.4	2
404- 61	GJ 1006A	107	00 16 14.5	19 51 38	10.9	12.26	1.54	1.21	2.79	1	7.900	7.311	7.100	66.1 ± 1.6	2
404- 62	GJ 1006B	108	00 16 16.0	19 51 51	12.1	13.21	1.58	1.21	2.81	1	8.907	8.321	8.104	66.1 ± 1.6	2
G 158-52	LTT141		00 17 40.8	-8 40 55	11.2	11.02	1.43	0.89	1.84	1	8.082	7.467	7.248	28.4 ± 2.3	1
+43: 44B	Gl 15B	4	00 18 25.5	44 01 37	10.3	11.06	1.82	1.24	2.82	1	6.793	6.184	5.952	282.0 ± 2.2	2
644- 95			00 19 12.3	-3 03 12	11.2	10.93	1.38	···	···	3	8.290	7.661	7.476	31.2 ± 2.3	1
292- 67		112	00 20 29.2	33 05 08	15.2	16.09	···	1.69	3.75	1	10.312	9.734	9.347	79.3 ± 3.7	2
149- 56			00 21 57.8	49 12 37	12.1	12.84	···	1.10	2.48	1	9.137	8.453	8.206	···	
G 130-68	USNO 489	1068	00 24 34.7	30 02 29	13.4	14.56	···	1.33	3.08	1	9.790	9.231	8.912	52.8 ± 4.4	2
349- 18		1073	00 25 20.6	22 53 12	13.3	14.19	···	1.26	2.90	1	9.723	9.165	8.867	···	
G 217-51		6007	00 27 06.7	49 41 53	13.5	14.25	···	1.27	2.91	1	9.769	9.138	8.892	46.9 ± 3.1	2
645- 35	GJ 1012	1084	00 28 39.4	-6 39 48	11.6	12.17	1.52	1.16	2.66	1	8.035	7.497	7.156	75.4 ± 5.1	2
G 172-1			00 28 53.9	50 22 32	12.9	13.15	···	1.22	2.81	1	8.865	8.277	7.992	···	
G 270-1	GJ 1013	113	00 31 35.3	-5 52 11	12.2	12.73	1.63	1.14	2.59	1	8.791	8.220	7.950	62.3 ± 4.2	2
G 172-11	G 217-58	1104	00 35 53.2	52 41 12	12.8	12.54	···	1.05	2.34	1	8.952	8.349	8.096	62.1±9.1	2
G 172-13			00 36 08.4	45 30 57	11.8	11.71	1.54	1.04	2.30	1	8.193	7.576	7.357	43.9 ± 9.8	2
G 172-14		1111	00 37 25.9	51 33 07	12.4	11.41	1.43	0.91	1.87	1	8.424	7.792	7.621	30.1 ± 10.2	2
G 218-5			00 38 15.2	52 19 55	10.6	10.48	···	0.86	1.72	1	7.707	7.038	6.894	43.4 ± 1.9	1
G 172-15			00 38 33.8	51 27 57	13.1	12.60	···	1.08	2.44	1	8.907	8.321	8.051	64.3 ± 10.7	2
W 1056	Gl 26	119	00 38 58.7	30 36 58	10.8	11.08	···	1.05	2.31	11	7.443	6.886	6.595	80.1 ± 3.9	2
465- 62	G 32-38		00 39 33.7	14 54 34	13.4	14.36	···	1.27	2.96	1	9.846	9.257	8.961	35.3±1.8	2
-27:194	G 266-148		00 39 44.5	-26 27 57	10.8	10.22	1.28	···	···	3	7.805	7.236	7.027	24.7 ± 1.6	1
+23: 97	G 69-17		00 43 41.3	23 53 07	11.3	10.98	1.32	0.83	1.84	1	8.296	7.647	7.488	23.6 ± 2.3	1
G 132-25			00 45 56.6	33 47 11	14.6	16.70	1.61	···	···	23	10.159	9.634	9.306	14.7±4.0	2
G 268-47			00 47 07.9	-23 30 27	14.0	14.40	···	···	···	4	9.866	9.338	9.084	···	
+15:116	G 33-11		00 48 13.1	16 40 16	11.2	12.25	1.32	···	···	5	8.221	7.596	7.480	···	
G 69-24			00 48 45.5	27 01 09	11.7	12.38	1.52	···	···	5	8.752	8.193	7.970	···	
G 32-59	GJ 1024	1168	00 56 38.2	17 27 35	12.7	13.71	···	1.24	2.83	1	9.281	8.651	8.421	56.4 ± 4.1	2
706- 69	G 170-102		00 56 50.4	-11 35 19	10.9	11.13	1.43	···	···	3	8.231	7.593	7.344	41.7 ± 2.3	1
G 172-30		1169	00 57 02.6	45 05 09	12.2	11.95	1.57	1.12	2.53	1	8.123	7.473	7.250	···	
G 172-34			01 02 52.6	47 02 50	12.1	10.97	1.43	0.86	1.71	1	8.252	7.568	7.437	24.1 ± 2.7	1
USNO 492	GJ 1028	134	01 04 53.7	-18 07 29	13.4	14.51	1.87	1.47	3.33	11,16	9.381	8.755	8.453	99.8 ± 5.0	2
G 69-47	GJ 1029	135	01 05 37.3	28 29 34	14.0	14.79	···	1.49	3.44	1	9.485	8.880	8.545	79.3 ± 3.0	2
294- 50			01 06 30.7	30 17 11	15.6	16.32	1.72	···	···	14	11.249	10.681	10.362	···	

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
466-235	GJ 1030		01 06 41.5	15 16 22	11.7	11.45	1.47	1.01	2.30	1,3	7.988	7.367	7.124	45.2 ± 2.6	1
-33:408	G 269-104		01 07 13.5	-32 25 46	10.8	10.66	1.40	···	···	3	7.903	7.262	7.025	34.8 ± 2.2	1
G 2-21			01 07 52.1	12 52 51	12.2	12.17	1.47	···	···	5	8.780	8.170	7.959	···	
467- 16			01 11 25.3	15 26 22	13.5	14.36	···	1.46	3.38	1	9.077	8.484	8.155	···	
767- 22	Gl 54.1	138	01 12 30.5	-16 59 56	11.2	12.10	1.83	1.38	3.13	11	7.263	6.747	6.408	268.8 ± 3.2	2
Oxf+25:4674	Gl 55.2		01 16 39.2	25 19 53	10.7	10.10	1.35	···	···	3	7.490	6.813	6.649	44.0 ± 1.6	1
-36:491	GJ 1036		01 17 15.3	-35 42 56	10.8	11.31	1.51	···	···	3	7.839	7.180	6.927	60.6 ± 2.4	1
R 324	G 69-63	6027	01 17 50.6	28 40 14	12.2	11.56	···	0.97	2.06	1	8.347	7.772	7.504	37.4 ± 10.6	2
883-221	G 274-15B		01 22 09.9	-26 54 22	15.0	14.85	···	···	···	4	11.097	10.526	10.282	···	
G 72-23		5037	01 40 16.5	31 47 30	13.0	13.91	···	1.26	2.90	1	9.385	8.793	8.539	···	
708-416	G 271-149	6033	01 46 36.8	-8 38 57	12.0	12.99	1.58	1.17	2.69	1	8.807	8.224	7.976	70.1 ± 14.2	2
G 271-66		1302	01 51 04.0	-6 07 04	13.3	14.41	···	1.42	3.26	1	9.412	8.832	8.527	···	
R 555	Gl 78	1303	01 51 48.6	-10 48 12	11.2	11.80	1.49	1.01	2.22	11	8.426	7.873	7.653	56.4 ± 3.0	1
-23:693	Gl 79	1307	01 52 49.0	-22 26 05	8.8	8.88	1.41	0.90	1.80	11	6.044	5.396	5.169	90.2 ± 1.4	1
708-589		1311	01 53 50.4	-10 32 13	14.4	15.43	···	1.41	3.23	1	10.468	9.942	9.616	···	
469- 50	G 3-34		02 00 57.7	15 00 36	11.4	10.60:	1.28	···	···	5	8.144	7.541	7.407	···	
30- 55	G 245-40		02 01 54.0	73 32 32	14.1	14.12	1.90	···	···	4	9.252	8.669	8.382	···	
469- 73	G 3-35		02 02 44.2	13 34 33	14.0	14.27	···	···	···	4	9.654	9.034	8.786	···	
G 3-40	G 73-26		02 07 37.4	13 54 49	12.9	12.51	1.46	···	···	5	9.175	8.548	8.305	···	
G 173-39			02 08 53.6	49 26 56	12.5	12.47	1.54	1.14	2.62	1	8.401	7.821	7.577	···	
G 133-71			02 11 22.1	44 06 42	12.7	11.95	1.39	···	···	5	8.806	8.105	7.921	···	
G 134-14			02 13 10.9	46 16 51	10.9	10.25	1.19	···	···	3	8.150	7.534	7.378	29.7 ± 1.9	1
USNO 111	GJ 1045	1366	02 14 59.7	17 25 09	13.6	14.44	1.62	1.26	2.88	1	9.958	9.383	9.088	48.8 ± 3.4	2
245- 10		1378	02 17 09.9	35 26 33	14.7	15.90	···	1.71	3.83	1	9.965	9.355	8.974	96.4 ± 1.1	2
+47:612	Gl 96		02 22 14.6	47 52 48	9.9	9.40	1.47	···	···	3	6.385	5.745	5.558	83.9 ± 1.3	1
353- 74	LTT10808		02 24 46.1	25 58 34	12.4	11.62	···	0.95	2.03	1	8.461	7.850	7.604	···	
354- 46	Gl 102	1417	02 33 37.1	24 55 39	12.5	12.98	1.67	1.27	2.92	1	8.436	7.859	7.586	102.4 ± 3.7	2
-44:775	Gl 103		02 34 22.5	-43 47 46	8.8	8.87	1.38	0.89	1.86	11	5.789	···	4.893	86.9 ± 0.9	1
410- 93	Gl 104		02 35 53.2	20 13 11	11.3	10.68	1.47	1.01	2.22	1,3	7.205	6.571	6.326	71.6 ± 1.9	1
197- 48	G 78-3B		02 45 41.1	44 57 03	15.2	15.00	···	···	···	4	11.162	10.608	10.229	···	
651- 7		17	02 46 14.7	-4 59 18	14.8	15.86	1.50	···	···	16	10.970	10.468	10.141	60.3 ± 8.2	2
411- 6		1443	02 46 34.8	16 25 11	16.1	16.86	2.02	···	···	4	10.971	10.518	10.159	68.5 ± 3.5	2
354-414	Gl 113 C		02 48 09.7	27 04 25	15.0	16.50	···	···	···	4	10.744	10.143	9.845	49.5 ± 4.6	2.5
298- 42			02 51 49.7	29 29 13	13.1	13.96	···	1.25	2.90	1	9.507	8.954	8.681	···	
+33:529	Gl 116	159	02 52 06.9	34 23 23	9.8	9.63	1.32	0.80	1.57	1	7.060	6.445	6.279	70.2 ± 1.7	1
354-423	G 36-38		02 52 25.0	26 58 30	11.4	11.11	1.49	0.95	2.03	1	7.960	7.299	7.058	37.7 ± 2.6	1
354-326	Gl 118.2C		02 55 35.7	26 52 20	13.6	13.86	1.58	···	···	4	9.554	8.949	8.686	39.3 ± 5.9	2.5

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
R 331		1483	02 59 10.6	36 36 40	12.4	13.04	1.52	1.14	2.60	1	9.105	8.487	8.359	···	
78-18		1499	03 08 23.6	43 02 08	15.1	14.70	1.50	···	···	4	10.811	10.210	9.962	40.8 ± 5.6	2
G78-19	Gl 125	1507	03 09 30.8	45 43 58	10.2	10.15	1.49	0.99	2.18	1	6.763	6.076	5.841	64.8 ± 4.3	1
W 132	G 5-20		03 11 48.0	19 40 15	11.8	11.06	1.49	0.91	1.90	6	8.024	7.438	7.245	20.6 ± 2.3	2
299- 36		1516	03 14 12.4	28 40 41	15.7	16.77	2.15	···	···	4	10.979	10.438	10.108	67.0 ± 8.7	2
G 78-28			03 17 12.2	45 22 22	13.1	12.39	···	1.13	2.57	1	8.411	7.822	7.584	···	
355- 51		1525	03 17 45.1	25 15 06	11.4	11.84	1.46	···	···	3	8.451	7.892	7.646	47.3 ± 3.4	1
412- 31			03 20 59.6	18 54 23	17.6	19.21	···	2.23	4.51	18	11.744	11.043	10.572	68.3 ± 0.6	4
356- 14	Gl 140 C		03 24 12.8	23 46 19	11.0	11.89	1.50	0.97	2.22	1	8.255	7.687	7.421	···	
300- 3			03 27 14.3	27 23 08	11.3	11.78	···	0.95	2.04	1	8.577	7.922	7.738	36.7 ± 3.5	1
356-106			03 28 49.5	26 29 12	12.7	13.40	···	1.20	2.74	1	9.241	8.668	8.401	···	
G 5-43	Gl 143.3	1554	03 31 47.1	14 19 19	11.8	12.27	1.58	1.04	2.31	1	8.667	8.132	7.880	51.6 ± 3.1	2
653- 13		176	03 35 38.5	-8 29 22	14.9	14.32	0.77	0.41	0.86	14	10.389	9.798	9.451	···	
+16:502B	Gl 150.1B		03 43 45.2	16 40 02	11.4	10.71	1.49	0.96	2.01	11	7.515	6.869	6.647	61.4 ± 2.4	1
+16:502A	Gl 150.1A		03 43 52.5	16 40 19	10.3	9.88	1.47	0.90	1.77	11	7.039	6.381	6.222	58.1 ± 2.0	1
+34:724	G 95-53		03 44 30.9	34 58 23	10.9	10.63	1.38	···	···	3	7.914	7.288	7.087	38.5 ± 2.2	1
G 6-33	G7-1		03 45 54.8	14 42 52	12.1	11.92	1.43	···	···	5	8.777	8.082	7.877	···	
+25:613	Gl 154		03 46 20.1	26 12 55	10.4	9.60	1.45	0.90	1.84	19	6.676	6.015	5.823	68.6 ± 1.8	1
593- 68		1604	03 51 00.0	00 52 44	16.5	18.02	···	···	4.22	12	11.262	10.592	10.191	···	
W 227		1610	03 52 41.6	17 01 05	12.9	13.79	1.76	1.37	3.14	1	8.870	8.322	8.078	70.0 ± 13.8	2
- 1:565B	Gl 157 B		03 57 28.9	-1 09 23	10.8	11.48	1.52	···	···	9	7.782	7.148	6.935	63.4 ± 2.0	1
32- 16		1631	04 08 11.0	74 23 01	13.8	13.34	···	1.19	2.68	1	9.248	8.666	8.423	···	
G 8-17	G 39-3		04 14 53.4	27 45 28	12.4	12.68	1.52	···	···	5	8.749	8.145	7.873	···	
415- 18	G 8-29		04 21 50.0	21 19 43	12.4	13.03	1.56	···	···	5	9.080	8.413	8.195	···	
SA 3-112	G 248-19	1663	04 21 57.5	75 08 28	12.3	12.16	1.51	1.03	2.33	1	8.549	7.986	7.760	···	
+21:652	Gl 169		04 29 00.1	21 55 21	8.6	8.30	1.36	0.81	1.62	3,9	···	···	4.861	87.2 ± 1.0	1
G 39-29			04 38 12.5	28 13 00	12.0	12.51	···	1.22	2.82	1	8.176	7.601	7.330	···	
+20:802	Gl 174		04 41 18.8	20 54 5	9.0	8.09	1.09	0.65	1.28	3,9	5.856	···	5.145	74.1 ± 1.2	1
G 39-44			04 44 26.0	27 51 44	12.3	11.26	1.53	···	···	5	7.918	7.280	7.112	···	
G 39-35			04 44 37.3	29 49 16	13.6	13.45	1.60	···	···	5	9.635	9.066	8.808	···	
USNO 223	GJ 1072	1706	04 50 50.8	22 07 22	14.7	15.20	1.95	1.49	3.40	1,16	9.863	9.339	8.998	71.1 ± 5.7	2
R 794	G 85-36		05 01 15.4	24 52 24	11.8	11.51	1.48	···	···	4	8.072	7.446	7.221	34.4 ± 13.4	2
891- 52		1729	05 02 44.2	-31 28 37	14.2	14.50	···	1.24	2.82	9	10.218	9.756	9.445	···	
W 230	G 85-41		05 07 49.2	17 58 58	11.4	11.80	1.66	1.11	2.49	1	8.040	7.444	7.173	···	
R 388		1740	05 09 09.9	15 27 34	12.2	12.46	1.45	1.05	2.36	1	8.774	8.238	7.962	33.7 ± 18.0	2
G 85-48		1743	05 10 57.4	18 37 36	13.6	14.18	···	1.20	2.75	1	9.915	9.329	9.060	···	
VMa 17	Gl 192		05 12 42.1	19 39 56	10.9	10.76	1.53	1.01	2.22	19	7.339	6.755	6.520	70.4 ± 5.1	2

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
G99-12	Gl 204	1763	05 28 26.1	-3 29 57	8.4	7.65	1.10	0.69	1.25	11	5.611	···	4.872	77.0 ± 0.9	1
417-213	GJ 2043A		05 29 27.0	15 34 38	11.0	10.63	···	0.92	1.91	1	7.528	6.978	6.766	57.5 ± 2.2	1
R 43	G 97-49		05 33 23.0	12 21 15	12.8	12.57	1.52	···	···	6	9.166	8.561	8.337	···	
R 46	G 97-54		05 34 52.1	13 52 47	12.3	11.81	1.59	1.14	2.60	1	7.797	7.179	6.914	80.6 ± 9.8	2
G 191-47			05 37 03.9	52 31 24	10.8	10.15	1.12	···	···	3	7.986	7.405	7.251	26.1 ± 1.9	1
+53:935	Gl 212	1775	05 41 30.7	53 29 23	9.7	9.76	1.47	0.95	2.01	11,19	6.593	5.932	5.728	80.1 ± 1.7	1
658- 44	GJ 2045	1777	05 42 12.7	-5 27 56	14.3	15.28	1.86	···	···	4	10.236	9.693	9.363	78.2 ± 2.7	2
57- 46		1808	06 02 25.5	66 20 40	14.6	14.52	···	1.31	3.01	1	9.855	9.213	8.917	···	
Grw+82:1111	Gl 226	215	06 10 19.7	82 06 25	11.2	10.50	···	1.05	2.32	11	6.884	6.294	6.065	106.3 ± 3.0	2
G 192-22			06 14 02.4	51 40 08	12.0	12.86	···	1.14	2.59	1	8.857	8.347	8.110	70.0 ± 6.0	4
G 101-35			06 21 13.0	44 14 30	12.0	12.27	···	1.03	2.25	1	8.737	8.080	7.876	···	
205- 44			06 31 50.7	41 29 45	13.5	14.83	···	1.38	3.27	1	9.722	9.168	8.831	···	
VBs 16	GJ 1092	220	06 49 05.4	37 06 53	13.2	13.78	···	1.21	2.78	1	9.548	9.051	8.794	75.0 ± 2.2	2
W 294	Gl 251	1879	06 54 49.0	33 16 05	10.8	10.03	···	1.13	2.53	11	6.097	···	5.282	181.3 ± 1.9	1
+40:1758B	G 107-38		06 56 28.4	40 05 05	10.7	11.10	1.43	0.93	1.95	1	8.024	7.349	7.182	37.2 ± 4.2	2
G 107-36		1883	06 56 30.9	44 01 56	13.7	14.39	···	1.24	2.86	1	9.939	9.340	9.080	···	
+30:1367A	Gl 254		06 57 04.6	30 45 23	9.9	9.68	1.36	···	···	3	7.075	6.422	6.277	53.7 ± 1.9	1
G 109-35	GJ 1093	223	06 59 28.6	19 20 57	14.1	14.52	1.43	1.90	3.33	12	9.147	8.520	8.195	128.8 ± 3.5	2
255- 11			07 03 23.1	34 41 51	12.1	13.17	···	1.24	2.84	1	8.766	8.191	7.929	···	
Grw+68:2911	Gl 258		07 04 25.9	68 17 19	12.1	11.96	1.53	1.09	2.46	1	8.101	7.508	7.288	65.4 ± 2.9	1
R 874	G 88-4		07 04 49.6	24 59 55	11.7	11.62	1.48	···	···	5	8.240	7.632	7.395	···	
G 87-23			07 06 32.5	34 27 01	12.0	11.13	1.28	···	···	5	8.661	8.050	7.897	35.8 ± 13.4	2
G 107-48			07 07 37.7	48 41 13	12.3	13.40	···	1.24	2.84	1	9.097	8.526	8.250	···	
Grw+67:2334	G 250-34		07 07 50.4	67 12 04	11.7	11.17	1.50	···	···	3	7.836	7.213	7.037	56.5 ± 2.2	1
34-161	G 251-27		07 09 32.4	69 50 57	12.1	12.54	···	1.06	2.36	1	8.853	8.266	8.027	···	
G109-55	Gl 268.3A		07 16 19.7	27 08 33	11.4	10.83	1.52	1.10	2.48	1,3	7.021	6.442	6.189	81.1 ± 2.4	1
G 88-19		6119	07 17 29.9	19 34 17	12.2	12.79	···	1.10	2.47	1	9.030	8.432	8.173	47.1 ± 2.2	2
R 987	G107-061		07 18 08.1	39 16 29	10.3	10.34	···	0.95	2.00	1	7.202	6.595	6.381	69.2 ± 2.2	1
R 878	G 88- 28		07 27 28.6	22 02 38	10.5	11.25	···	0.99	2.16	1	7.773	7.142	6.934	51.7 ± 2.4	1
R 989	Gl 277B		07 31 57.3	36 13 47	11.6	11.81	1.52	1.19	2.71	11,19	7.595	6.989	6.763	84.9 ± 2.5	2.5
+36:1638	Gl 277Aa		07 31 57.7	36 13 10	10.6	10.59	1.47	1.08	2.41	11,19	6.793	6.187	5.933	84.9 ± 2.5	2
G 88-35			07 32 02.1	17 19 12	14.2	13.48	···	1.03	2.30	1	9.720	9.172	8.903	40.4 ± 6.1	2
G 88-36			07 32 02.9	17 19 10	12.1	11.00	1.40	0.87	1.75	1,3	8.131	7.493	7.297	28.9 ± 3.4	1
G 90-16	LTT17998		07 39 35.8	33 27 45	11.4	11.83	···	1.01	2.21	1	8.398	7.751	7.565	28.0 ± 2.1	1
+19:1797			07 40 51.1	19 35 21	10.7	9.93	1.15	0.68	1.27	1	7.853	7.275	7.133	24.0 ± 1.6	1
17-243		5126	07 41 45.1	75 01 02	13.3	13.01	···	1.00	2.23	1	9.542	8.916	8.664	···	
+37:1776	G 90-19		07 48 46.6	36 40 16	11.0	10.02	1.15	···	···	3	7.959	7.402	7.264	24.2 ± 2.2	1

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
424- 4			07 59 05.8	15 23 29	11.8	12.33	···	1.01	2.25	1	8.814	8.217	7.982	···	
G 194-7		1976	08 03 19.5	52 50 38	10.8	11.38	1.50	0.98	2.12	1	8.064	7.472	7.229	32.1 ± 4.3	1
+34:1740	GJ 1107		08 05 42.1	34 04 39	11.2	10.14	1.34	0.79	.53	1	7.642	7.010	6.879	36.5 ± 1.9	1
35-148		1983	08 08 00.2	71 55 17	14.7	14.77	···	1.14	2.57	1	10.815	10.264	10.061	29.7 ± 6.5	2
366- 45	G 40-9		08 09 30.9	21 54 17	11.3	11.80	···	1.01	2.22	1	8.296	7.687	7.486	46.3 ± 3.3	1
G 111-61		1988	08 12 26.5	43 09 29	13.6	14.26	···	1.18	2.74	1	9.979	9.387	9.065	···	
367- 67	G 40-16	6143	08 17 31.7	20 59 52	12.5	12.54	1.49	···	···	5	8.955	8.378	8.128	···	
G 90-52			08 17 51.2	31 07 45	11.8	11.22	1.49	···	···	5	7.975	7.331	7.100	···	
425- 14	GJ 1110	2011	08 28 12.7	20 08 22	13.3	13.12	1.47	1.07	2.41	1	9.382	8.850	8.634	45.2 ± 3.2	2
Vyss.	Gl 308AB	247	08 28 22.2	35 00 59	10.8	10.73	1.55	0.94	1.94	1	7.669	7.069	6.844	51.2 ± 6.6	1
G 51-15	GJ 1111	248	08 29 49.5	26 46 34	14.4	14.90	2.04	1.97	4.22	11	8.189	7.595	7.232	275.8 ± 3.0	2
725- 15		2024	08 31 23.4	-10 29 53	14.4	15.00	···	1.41	3.25	9	10.062	9.509	9.157	···	
35-219		2025	08 31 29.9	73 03 45	13.1	12.92	1.57	1.18	2.71	1	8.786	8.222	7.953	82.8 ± 20.8	2
425- 7	GJ 2069B		08 31 37.4	19 23 49	13.4	13.32	···	1.30	3.02	1	8.649	8.067	7.736	78.1 ± 5.7	1.5
425- 72	GJ 2069Aa		08 31 37.5	19 23 39	11.8	11.90	1.85	1.21	2.80	1,3	7.536	6.912	6.626	78.1 ± 5.7	1
605- 23		2026	08 32 30.4	-1 34 38	17.5	18.44	2.10	···	4.17	12	12.047	11.476	11.151	50.8 ± 0.5	2
59-360		250	08 35 49.1	68 04 09	12.4	11.64	1.55	1.07	2.44	11	7.877	7.302	7.084	77.6 ± 4.5	2
+67:552	Gl 310	251	08 36 25.6	67 17 42	9.3	9.32	1.43	0.90	1.84	1	6.420	5.771	5.557	72.0 ± 1.3	1
35-258			08 36 49.6	69 49 17	11.8	11.77	···	0.91	1.87	1	8.849	8.293	8.050	···	
G 9-11		2029	08 37 07.9	15 07 47	11.8	11.79	1.46	1.05	2.35	1	8.093	7.545	7.308	52.7 ± 15.2	1
G 40-31	G 51-19		08 37 22.8	26 12 24	13.4	14.17	1.54	···	···	5	9.762	9.168	8.919	···	
17-187		2031	08 38 35.4	75 47 46	14.0	14.15	···	1.14	2.63	1	10.149	9.641	9.387	···	
726- 6		2046	08 44 22.3	-10 24 11	14.0	13.99	···	1.16	2.69	1	9.768	9.222	8.958	···	
R 622	GJ 1114	2060	08 51 43.8	18 07 29	11.2	11.55	1.52	0.98	2.11	1	8.237	7.709	7.523	55.5 ± 3.5	1
+28:1660B	Gl 324B	2063	08 52 40.9	28 18 59	12.7	13.14	1.64	1.33	3.00	9	8.560	7.979	7.651	76.8 ± 2.4	2
666- 9		2065	08 53 36.2	-3 29 32	17.9	18.80	···	···	4.36	12	11.185	10.468	9.972	117.3 ± 1.5	2
666- 11		254	08 54 12.2	-8 04 59	16.4	17.41	1.75	1.90	3.97	12	11.538	11.079	10.805	···	
LP426-40	GJ 1116A	2076	08 58 15.1	19 45 47	12.8	13.65	···	1.68	3.82	1	7.776	7.232	6.872	191.2 ± 2.5	2
165- 10	GJ 1119	2092	09 00 32.5	46 35 11	12.5	13.32	···	1.32	3.04	1	8.630	8.048	7.748	96.9 ± 2.7	3
60-179	G 234-53		09 02 52.8	68 03 46	12.3	12.65	···	1.18	2.72	1	8.448	7.986	7.685	98.0 ± 10.6	2
645- 23		2106	09 07 02.7	-22 08 49	14.0	14.19	···	1.32	3.05	8	9.516	8.955	8.614	···	
60-205	G 234-56		09 08 46.0	66 35 38	13.1	12.96	···	1.11	2.50	1	9.158	8.650	8.406	···	
G 47-28		5146	09 12 02.7	27 54 24	11.3	12.28	···	1.11	2.50	1	8.464	7.788	7.543	35.9 ± 9.7	2
G 47-31		2121	09 16 05.2	29 19 44	12.3	12.37	1.43	1.07	2.28	5,9	8.875	8.322	8.126	···	
G 47-33	LTT12449		09 18 46.2	26 45 11	11.3	11.77	1.50	···	···	5	8.257	7.641	7.410	···	
G 47-34			09 20 21.3	32 21 47	13.1	13.55	1.53	···	···	5	9.597	8.954	8.662	···	
G 115-71			09 21 49.1	43 30 28	13.3	14.02	···	1.29	2.93	1	9.452	8.826	8.528	···	

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
G 161-34	Gl 347B	2146	09 28 55.7	-7 22 11	14.8	15.04	1.84	1.32	3.03	11	10.397	9.887	9.556	60.5 ± 4.1	2.5
370- 26		269	09 29 11.1	25 58 09	15.8	16.43	1.73	1.66	3.61	13	10.928	10.339	9.973	···	
314- 20	Gl 354.1B		09 32 48.2	26 59 44	14.6	14.70	···	···	···	4	10.337	9.815	9.437	56.4 ± 0.9	1
728- 7			09 35 59.7	-13 20 25	15.5	15.52	1.60	···	···	14	11.466	10.835	10.519	···	
Grw+70:4336	Gl 362	2178	09 42 51.8	70 02 22	11.3	11.24	1.52	1.11	2.53	1	7.328	6.755	6.467	86.7 ± 2.2	1
G 117-36			09 43 40.5	36 24 58	11.0	10.77	1.33	···	···	3	8.342	7.681	7.372	19.9 ± 4.2	1
+70:578	G 252-45		09 48 49.8	69 45 55	10.4	9.70	1.55	···	···	3	7.493	6.918	6.823	31.2 ± 1.4	1
G 116-60			09 52 31.6	45 03 53	13.3	13.72	···	1.15	2.61	1	9.742	9.108	8.866	···	
W 327			09 53 30.9	35 34 17	12.8	13.17	···	1.08	2.41	1	9.309	8.693	8.461	···	
W 330	G 116-65		09 55 43.6	35 21 42	12.2	12.73	···	1.11	2.52	1	8.843	8.282	8.060	···	
G 49-32		2212	09 56 27.0	22 39 01	13.4	14.20	···	1.29	2.98	9	9.619	9.021	8.748	···	
G 146-5			09 59 45.9	47 12 11	13.4	14.09	···	1.22	2.81	1	9.771	9.213	8.939	···	
G 43-23			10 02 42.4	14 59 13	13.6	14.23	1.70	···	···	4	9.632	9.123	8.792	···	
F I-285		2220	10 06 43.8	41 42 53	11.0	11.33	1.51	0.94	1.97	1	8.241	7.641	7.416	45.0 ± 2.6	1
G 118-43			10 15 06.9	31 25 11	12.9	13.60	···	1.19	2.74	1	9.410	8.780	8.410	···	
+20:2465	Gl 388		10 19 36.3	19 52 12	9.8	9.40	1.54	1.10	2.51	19	5.458	···	4.572	204.6 ± 2.8	2
W 356	G 118-53		10 22 05.1	36 55 25	10.9	10.62	1.37	0.81	1.60	1	7.993	7.383	7.204	32.3 ± 1.7	1
G 54-26		2260	10 25 30.3	26 23 18	13.4	13.19	1.57	1.20	2.74	4,9	9.032	8.402	8.144	···	
G 118-66		2274	10 30 23.7	32 50 13	12.7	12.72	1.45	1.08	2.47	1	8.898	8.318	8.041	···	
37-179		283	10 35 27.2	69 26 59	12.0	11.95	1.53	1.12	2.61	11	7.883	7.378	7.144	75.9 ± 3.8	2
316-400		286	10 37 28.9	30 11 11	17.8	17.74	···	···	···	15	11.867	11.294	10.986	···	
263- 15	GJ 1134	287	10 41 38.0	37 36 39	11.8	12.98	1.61	1.26	2.91	1	8.493	8.007	7.695	96.7 ± 2.3	2
731- 58		292	10 48 12.5	-11 20 08	14.8	15.73	···	2.14	4.38	11	8.850	8.264	7.967	220.3 ± 3.6	2
263- 29	GJ 1138A	293	10 49 45.6	35 32 51	11.8	13.10	1.59	1.25	2.93	11	8.541	8.022	7.722	102.9 ± 3.2	2
LHS 2317		2317	10 50 25.9	33 06 05	11.8	13.07	1.52	1.16	2.69	1	8.906	8.257	8.023	43.6 ± 2.8	2
+70:639	Gl 406.1	2334	10 57 38.1	69 35 47	10.5	10.27	1.39	0.85	1.70	1	7.517	6.874	6.721	43.4 ± 1.5	1
G 147-11		2337	10 59 06.3	30 15 12	14.6	15.36	1.75	···	···	4	10.571	9.933	9.673	44.8 ± 5.8	2
R 104	Gl 408	6193	11 00 04.3	22 49 59	10.1	10.02	···	1.07	2.38	11	6.322	5.749	5.497	151.1 ± 1.6	1
37-257			11 00 23.8	72 52 24	12.3	12.33	···	1.00	2.18	1	8.905	8.367	8.230	···	
+44:2051A	Gl 412A	38	11 05 29.0	43 31 35	8.7	8.77	1.57	0.98	2.07	1	5.529	···	4.746	188.8 ± 6.1	2
+44:2051B	Gl 412B	39	11 05 31.3	43 31 16	14.0	14.44	2.08	1.66	3.77	11	8.735	8.165	7.828	188.8 ± 6.1	2
F I-645	G 176-8		11 05 33.6	45 00 31	11.1	11.11	···	0.93	1.92	1	8.099	7.429	7.215	30.0 ± 2.3	1
CW UMa	G 119-62		11 11 51.7	33 32 11	11.2	12.38	···	1.16	2.66	1	8.294	7.755	7.486	68.3 ± 10.6	2
+74:456C	Gl 420B		11 15 11.0	73 28 36	10.7	11.40	···	···	···	3	7.855	7.266	7.001	68.1 ± 1.2	1
432- 24	G 56-26	6199	11 15 12.4	19 27 12	12.2	12.87	···	1.14	2.61	1	8.906	8.350	8.088	···	
169- 22		2395	11 19 30.5	46 41 43	13.9	15.78	···	1.68	3.78	1	10.094	9.519	9.222	···	
+66:717	Gl 424	41	11 20 05.2	65 50 47	9.3	9.32	1.42	0.90	1.88	1	6.291	5.734	5.504	111.7 ± 3.8	2

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
G 176-34		2403	11 25 00.6	43 19 39	14.3	15.08	···	1.34	3.08	1	10.285	9.778	9.468	···	
673- 13		2428	11 35 07.3	-5 39 21	14.0	14.85	···	1.31	2.99	1	10.236	9.648	9.326	···	
G 122-34		2430	11 35 31.9	38 55 37	12.7	13.12	1.55	1.16	2.66	1	9.011	8.430	8.178	···	
+40:2442	G 122-36	2432	11 36 40.8	39 11 27	10.4	10.03	1.36	0.81	1.60	1	7.401	6.805	6.610	41.0 ± 1.5	1
R 112			11 37 38.9	58 42 42	12.2	12.57	···	1.04	2.32	1	8.958	8.342	8.096	···	
R 115	G 56-51		11 42 01.7	14 46 35	12.7	12.58	1.48	···	···	5	8.861	8.186	7.954	···	
375- 25			11 43 23.6	25 18 13	13.0	13.83	···	1.21	2.79	1	9.529	8.872	8.639	···	
433- 47			11 45 11.9	18 20 58	12.5	13.27	1.47	···	···	5	9.156	8.510	8.263	···	
38-393			11 47 05.4	70 01 58	13.5	13.60	···	1.22	2.80	1	9.307	8.756	8.422	···	
+29:2228	Gl 452.4		11 54 57.4	28 44 15	10.5	10.53	1.39	0.84	1.68	1	7.798	7.144	6.988	34.8 ± 2.0	1
G 122-58			11 58 17.6	42 34 29	13.5	14.08	···	1.24	2.87	1	9.547	8.975	8.708	···	
G 122-60			11 58 59.4	42 39 39	11.7	12.07	···	1.01	2.21	1	8.587	8.005	7.783	···	
SA 56-27	Gl 455	2497	12 02 18.1	28 35 14	12.9	12.86	1.80	1.12	2.50	1	9.097	8.611	8.385	49.4 ± 3.9	2
G 198-19		2503	12 03 17.6	38 52 48	14.2	14.66	···	1.20	2.77	1	10.287	9.731	9.479	···	
R 689	G 237-43	6220	12 05 29.8	69 32 22	12.6	13.07	···	1.22	2.80	1	8.740	8.166	7.898	60.2 ± 13.4	2
G 123-8	Wo 9393		12 10 56.8	41 03 27	10.8	10.61	1.34	···	···	3	7.870	7.309	7.066	47.0 ± 1.9	1
+55:1519B	Gl 458B		12 12 21.1	54 29 23	12.8	13.33	1.61	···	···	4	9.177	8.641	8.399	75.1 ± 15.0	2
U 40- 83	G 123-13		12 12 29.4	39 40 28	11.4	11.40	···	0.97	2.10	1	8.109	7.492	7.271	34.1 ± 7.6	1
G 123-16			12 15 28.4	39 11 14	11.7	11.89	···	0.98	2.11	1	8.654	7.988	7.782	···	
554- 64	GJ 1155A	2541	12 16 51.9	02 58 04	12.8	13.16	···	1.08	2.50	1	9.220	8.648	8.412	46.3 ± 3.4	2
+29:2279	Gl 459.3	2544	12 19 24.2	28 22 56	10.8	10.64	1.46	0.92	1.90	1	7.692	7.036	6.802	40.6 ± 1.9	1
R 690	Gl 463	2551	12 23 00.3	64 01 50	11.3	11.59	1.46	1.04	2.35	1	7.929	7.333	7.108	55.5 ± 2.3	1
+21:2415	G 59-17		12 23 26.9	20 17 27	10.7	10.02	1.07	···	···	3	7.842	7.309	7.197	22.3 ± 1.5	1
64-194	G 237-64		12 23 33.1	67 11 18	11.4	11.25	···	1.06	2.37	1	7.586	7.079	6.804	77.0 ± 5.7	1
G 123-35			12 29 02.9	41 43 50	12.6	12.90	···	1.18	2.72	1	8.811	8.189	7.927	···	
130-225	GJ 1159A	331	12 29 14.5	53 32 44	14.0	14.21	···	1.17	2.73	11	10.006	9.506	9.228	39.9 ± 1.0	3
W 419			12 32 18.6	12 10 23	13.7	12.50	1.42	···	···	5	9.620	9.020	8.857	···	
20-375		2610	12 42 25.2	77 53 20	15.1	15.84	1.86	···	···	4	11.221	10.716	10.380	···	
LHS 2613		2613	12 42 49.9	41 53 47	11.7	12.31	1.58	1.20	2.74	1	8.123	7.504	7.246	94.2 ± 11.1	2
G 59-37	GJ 1163		12 43 36.0	25 06 21	12.0	12.91	···	1.13	2.56	1	8.953	8.386	8.082	···	
R 991	G 123-60	2633	12 47 01.0	46 37 33	11.1	11.76	1.50	1.05	2.36	1	8.085	7.470	7.223	49.9 ± 2.3	1
436- 19			12 49 42.3	16 12 35	11.8	11.43	···	0.81	1.63	1	8.808	8.165	8.007	···	
G 199-51		2659	12 59 27.4	56 33 46	13.1	13.22	1.56	1.09	2.45	1	9.433	8.862	8.604	···	
G 123-84		2672	13 02 47.5	41 31 09	12.4	12.95	1.51	1.11	2.55	1	9.057	8.449	8.162	···	
322-836	GJ 1167		13 09 34.9	28 59 06	13.8	14.15	1.68	···	2.93	21	9.501	8.902	8.606	86.6 ± 14.8	2
G 177-25		2686	13 10 12.6	47 45 19	13.8	14.52	···	1.41	3.26	1	9.563	8.973	8.676	···	
378-774	GJ 1168	2695	13 13 04.7	20 11 26	12.3	12.91	1.52	1.16	2.64	1	8.870	8.242	8.012	···	

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
G 164-62	GJ 1170		13 17 58.4	36 17 57	11.5	11.29	1.42	0.92	1.98	1	8.135	7.533	7.360	46.3 ± 2.1	1
+35:2436A	Gl 507AB	2716	13 19 33.5	35 06 37	9.7	9.52	1.49	0.94	1.99	1	6.362	5.763	5.538	76.0 ± 3.3	1
R 1007	Gl 507.1		13 19 40.1	33 20 47	10.8	10.62	1.47	0.97	2.11	19	7.244	6.606	6.374	57.5 ± 2.3	1
+35:2409	Gl 508.2	2724	13 20 57.9	34 16 44	10.6	10.63	1.44	0.95	2.03	1	7.405	6.799	6.549	62.1 ± 1.8	1
66-284		2751	13 33 15.8	62 25 38	13.9	14.51	···	1.18	2.71	1	10.284	9.649	9.374	···	
R 1021	LTT13962		13 36 55.2	22 58 01	12.1	12.66	···	1.06	2.37	1	8.936	8.404	8.122	···	
+46:1889	Gl 521		13 39 24.0	46 11 10	10.0	10.23	1.40	0.94	2.02	9	7.066	6.501	6.282	75.4 ± 1.6	1
R 1026	GJ 1174	357	13 40 08.9	43 46 37	12.3	12.78	1.60	1.19	2.70	11	8.550	8.030	7.730	63.6 ± 3.8	3
USNO 735		2777	13 40 18.9	47 12 29	14.9	15.30	1.73	···	···	16	10.684	10.130	9.833	44.4 ± 5.3	2
R 1015		2784	13 42 43.2	33 17 25	11.4	11.97	1.64	1.18	2.69	1	7.804	7.208	6.969	109.9 ± 3.2	1
+15:2620	Gl 526	47	13 45 43.5	14 53 31	8.5	8.46	1.44	0.96	2.07	1	···	···	4.432	184.6 ± 2.8	2
R 1019	G 165-33	6261	13 50 51.8	36 44 16	12.8	13.65	···	1.24	2.84	1	9.288	8.693	8.408	···	
912- 32		2826	13 56 20.6	-28 03 49	14.3	15.30	···	1.39	3.20	9	10.457	9.873	9.577	···	
Ox+25:86067	G 150-54	2837	13 59 21.6	25 14 23	11.2	10.73	1.26	0.75	1.45	1	8.341	7.742	7.618	24.2 ± 2.1	1
+18:2811			14 00 45.2	18 05 56	11.6	10.25	1.24	0.76	1.55	6	7.860	7.254	7.118	27.1 ± 7.6	1
97-556		2864	14 07 48.0	57 11 45	13.9	14.20	···	1.23	2.82	1	9.833	9.315	9.025	···	
Grw+76:4935		2866	14 08 22.7	75 51 07	11.6	11.59	1.60	0.98	2.08	1	8.361	7.784	7.552	40.1 ± 7.2	2
R 992		2884	14 15 17.0	45 00 53	12.0	11.86	1.47	1.08	2.47	1	8.017	7.486	7.222	61.3 ± 6.1	2
325- 15		2887	14 17 02.9	31 42 47	12.2	13.11	1.70	1.31	3.02	1	8.455	7.892	7.610	62.2 ± 13.1	2
381- 94			14 17 47.8	21 26 01	11.2	11.61	···	0.94	1.96	1	8.497	7.936	7.657	22.8 ± 3.1	1
439-442			14 18 41.0	18 12 20	12.6	13.95	1.52	···	···	6	9.238	8.602	8.363	···	
220- 78		2890	14 18 59.1	38 38 26	11.4	11.57	1.40	0.91	1.92	1	8.506	7.867	7.707	26.9 ± 2.7	1
270- 67		370	14 20 53.1	36 57 16	15.3	16.17	···	1.50	3.32	13	11.061	10.549	10.300	···	
G 178-23			14 24 27.1	41 52 43	13.2	12.57	···	0.97	2.05	1	9.438	8.790	8.531	···	
174-340		2921	14 28 31.8	45 54 32	15.7	16.99	2.22	···	···	6	11.305	10.737	10.444	44.6 ± 5.5	2
+16:2658	Gl 552	373	14 29 29.7	15 31 56	10.5	10.68	1.49	1.01	2.22	1	7.275	6.664	6.415	70.1 ± 2.2	1
440- 38			14 32 10.7	16 00 49	12.8	13.61	···	1.20	2.81	1	9.290	8.702	8.414	···	
Grw+68:5067	G 239-22		14 37 39.9	67 45 31	12.3	12.09	···	0.95	2.05	1	8.839	8.266	8.063	···	
Grw+66:4437	Wo 9492		14 42 21.6	66 03 20	11.6	10.83	···	1.02	2.24	1	7.299	6.746	6.481	101.3 ± 12.8	1
858- 23			14 44 40.1	-22 14 45	15.0	16.30	···	···	···	4	10.579	10.012	9.649	···	
G 200-58		2973	14 46 00.6	46 33 25	14.2	14.77	1.85	1.35	3.01	13	10.132	9.591	9.285	···	
41-353		2976	14 46 56.1	68 14 10	13.5	13.48	···	1.07	2.38	1	9.797	9.262	8.988	···	
R 994		2977	14 46 59.8	17 05 09	11.5	11.89	1.43	0.96	2.08	1	8.587	7.965	7.740	30.1 ± 3.9	1
501- 31	G 66-37		14 52 28.5	12 23 33	11.4	11.61	1.52	···	···	5	7.949	7.312	7.086	···	
441- 33		3001	14 56 27.2	17 54 58	14.6	15.73	···	1.43	3.36	1	10.702	10.166	9.869	···	
441- 34		3002	14 56 27.8	17 55 07	17.5	18.60	···	1.86	3.96	17	11.931	11.320	10.936	···	
914- 54		3003	14 56 38.3	-28 09 47	16.4	17.05	···	2.17	4.52	12	9.957	9.327	8.917	157.8 ± 5.1	2

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
R 995	G 136-43		14 59 41.1	14 58 45	13.3	12.84	···	1.01	2.19	1	9.562	9.012	8.800	···	
R 1042	G 179-7		15 01 11.7	35 27 15	12.1	12.05	···	1.00	2.19	1	8.633	8.034	7.835	···	
R 1051	G 224-44	3018	15 04 18.5	60 23 04	11.1	11.00	1.50	0.98	2.11	1	7.674	7.067	6.870	56.9 ± 1.4	1
135- 97		5287	15 05 49.5	55 04 43	12.8	13.35	···	1.20	2.73	1	9.259	8.624	8.352	···	
442- 37			15 21 56.7	18 35 51	11.5	11.90	···	0.95	2.05	1	8.808	8.040	7.864	28.0 ± 4.9	1
R 508	Gl 585	396	15 23 51.1	17 27 59	13.1	13.72	1.80	1.30	2.99	11	9.109	8.575	8.286	85.1 ± 2.9	2
G 167-47		3080	15 31 54.2	28 51 09	13.3	14.28	···	1.28	2.96	1	9.707	9.118	8.813	···	
R 513	Gl 589A	399	15 35 20.5	17 42 46	11.9	12.34	···	1.09	2.39	11	8.692	8.179	7.957	70.3 ± 2.1	2
VBs 24A	GJ 1194A	402	15 40 03.5	43 29 39	12.0	11.91	1.57	1.09	2.49	1	8.315	7.759	7.548	74.2 ± 4.8	2
177-102	G 179-55		15 47 27.4	45 07 51	14.2	13.24	···	···	2.91	7	9.087	8.451	8.189	···	
274- 8		3122	15 49 38.3	34 48 55	12.3	13.20	···	1.24	2.86	1	8.718	8.137	7.824	58.9 ± 3.8	2
R 806		3129	15 53 06.3	34 45 14	11.6	11.76	1.52	1.08	2.43	1	7.951	7.325	7.071	52.9 ± 3.7	2
274- 21		3130	15 53 06.6	34 44 48	12.3	13.17	1.55	1.16	2.67	1	9.047	8.387	8.137	40 ± 4	3
G 180-11			15 55 31.8	35 12 02	12.9	13.68	···	1.30	3.02	1	8.999	8.290	7.986	···	
G 180-18			15 58 18.8	35 24 23	12.0	12.69	1.59	1.13	2.59	1	8.681	8.082	7.859	···	
G 180-21			16 00 50.8	40 19 44	12.7	13.12	···	1.13	2.56	1	9.185	8.586	8.344	···	
329- 18	Gl 607		16 01 43.6	30 10 50	11.8	12.52	1.56	1.10	2.50	1	8.657	8.084	7.882	61.4 ± 12.8	2
385- 18	Gl 609	411	16 02 50.9	20 35 21	12.4	12.57	···	1.25	2.83	11	8.119	7.655	7.366	100.3 ± 3.1	3
224- 38		3154	16 06 33.8	40 54 21	16.4	16.96	···	1.82	3.84	17	11.036	10.431	10.101	···	
275- 6	Gl 615.2C		16 13 56.3	33 46 24	11.7	12.23	···	···	···	3	8.596	7.998	7.731	44.4 ± 5.4	1
444- 35	GJ 1200	55	16 14 32.8	19 06 10	12.2	12.92	1.54	···	···	4	8.968	8.476	8.238	55.9 ± 3.3	2
275- 83	G 180-45		16 15 54.9	35 49 15	10.4	9.65	1.23	···	···	3	7.413	6.855	6.704	32.4 ± 1.1	1
+55:1823	Gl 616.2	5315	16 17 05.3	55 16 09	10.4	9.97	1.49	0.97	2.12	19	6.588	5.964	5.766	48.4 ± 1.1	1
G 202-45	Gl 623	417	16 24 09.1	48 21 11	10.0	10.28	···	1.04	2.32	11	6.629	6.139	5.913	124.3 ± 1.1	1
G 202-48	Gl 625		16 25 24.5	54 18 14	10.7	10.10	1.60	1.01	2.22	19	6.597	6.060	5.825	151.9 ± 1.1	1
386- 49	LTT14889		16 25 32.3	26 01 38	11.8	12.24	···	1.11	2.51	1	8.435	7.842	7.591	···	
G 138-28			16 26 33.4	15 39 53	11.3	10.53	···	···	···	3	7.976	7.383	7.170	38.0 ± 3.4	1
445- 22	G 138-33		16 28 02.0	15 33 57	12.8	13.18	···	1.10	2.50	1	9.357	8.783	8.531	···	
LHS 3210	GJ 1202	3210	16 31 35.0	17 33 49	12.3	12.80	1.58	1.13	2.52	13	8.924	8.422	8.171	53.5 ± 2.9	2
275- 68			16 35 27.4	35 00 57	12.1	12.95	···	1.22	2.82	1	8.641	8.063	7.774	···	
R 812	LTT14949		16 40 48.9	36 18 59	10.8	11.50	1.50	1.01	2.20	1	8.086	7.437	7.199	51.9 ± 4.7	1
+33:2777	Gl 638		16 45 06.3	33 30 32	8.4	8.10	1.31	0.80	1.56	22	5.461	···	4.697	102.3 ± 0.9	1
446- 6		3240	16 46 13.7	16 28 41	11.2	11.64	1.48	1.08	2.38	13	7.987	7.332	7.095	60.3 ± 3.4	1
R 644	Gl 642	3251	16 54 12.1	11 54 51	11.5	10.75	1.43	0.91	1.80	11	7.964	7.319	7.126	52.4 ± 2.0	1
G 139-3			16 58 25.3	13 58 10	13.5	13.13	···	1.25	2.85	1	8.859	8.284	7.737	···	
43-338		3258	16 58 43.8	68 53 52	12.4	11.94	1.42	0.96	2.08	1	8.758	8.159	7.949	···	
G 203-42		3262	17 03 23.8	51 24 21	13.0	13.58	···	1.34	3.06	11	8.809	8.188	7.932	105.4 ± 2.5	2

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
446- 35	GJ 1209	430	17 04 22.3	16 55 56	11.8	12.30	1.56	1.08	2.41	1	8.589	7.995	7.776	58.2 ± 3.2	2
R 863	Gl 655	5324	17 07 07.5	21 33 14	11.2	11.63	1.55	1.09	2.41	11,19	7.878	7.282	7.021	68.1 ± 2.9	1
G 203-47			17 09 31.5	43 40 53	11.5	11.77	···	1.21	2.79	1	7.374	6.760	6.486	132.8 ± 2.8	1
W 654	LTT15087		17 11 34.7	38 26 34	11.3	11.61	···	1.13	2.58	1	7.616	7.020	6.773	83.1 ± 2.1	1
447- 21			17 14 01.4	17 38 55	12.7	12.93	···	1.05	2.37	1	9.309	8.693	8.467	···	
447- 38	LTT15124		17 18 22.4	18 08 56	12.8	13.02	···	1.13	2.59	1	9.017	8.507	8.175	···	
F 48	Gl 671	3281	17 19 52.6	41 42 51	11.0	11.41	1.56	1.07	2.39	1	7.716	7.134	6.912	81.0 ± 1.8	1
G 203-63	GJ 1216	446	17 20 46.2	49 15 22	14.0	14.53	1.60	1.24	2.82	11	10.129	9.666	9.395	58.6 ± 4.9	2
70-297			17 22 42.1	67 50 14	13.4	13.65	···	1.11	2.50	1	9.846	9.248	9.017	···	
G 181-42		5327	17 23 52.3	33 00 08	13.3	13.47	···	1.06	2.45	1	9.712	9.144	8.894	24.7 ± 1.1	2
G 139-29	GJ 1219	448	17 27 40.0	14 29 02	13.5	13.69	1.76	···	···	4	9.692	9.227	8.900	50.1 ± 2.6	2
180- 17		3298	17 32 07.8	50 24 51	12.6	12.75	1.57	1.09	2.44	1	9.035	8.412	8.170	35.6 ± 3.6	2
+68:946	Gl 687	450	17 36 25.9	68 20 22	9.3	9.17	1.47	1.09	2.49	1	···	···	4.532	220.9 ± 0.9	1
+43:2796	Gl 694	3321	17 43 55.9	43 22 44	10.0	10.45	1.56	1.06	2.36	1	6.808	6.226	5.959	105.4 ± 1.2	1
G 182-34		3350	18 01 16.0	35 35 51	13.3	13.72	···	1.14	2.62	1	9.721	9.166	8.888	35.6 ± 2.8	2
71- 79		3351	18 01 26.4	66 35 06	14.0	13.95	···	1.04	2.32	1	10.300	9.741	9.492	···	
USNO 260	GJ 1223	457	18 02 46.2	37 31 04	14.1	14.80	1.79	1.40	3.24	1,16	9.748	9.204	8.897	83.5 ± 3.9	2
G 204-57		461	18 18 03.4	38 46 36	13.8	13.54	···	1.25	2.83	1	9.167	8.619	8.349	88.4 ± 3.6	2
USNO552		462	18 18 04.2	38 46 34	12.2	11.88	1.58	1.10	2.46	1,16	8.007	7.476	7.199	88.4 ± 3.6	2
G 205-19			18 22 43.4	37 57 48	11.3	11.67	1.46	0.94	2.01	1,3	8.534	7.825	7.635	28.3 ± 2.2	1
R 708	LTT15435		18 23 28.3	28 10 04	11.5	12.49	1.61	1.18	2.69	1	8.346	7.745	7.482	···	
G 205-20		3385	18 25 31.9	38 21 13	11.0	11.27	1.50	0.92	1.90	1	8.292	7.638	7.463	39.4 ± 1.8	1
G 205-28			18 31 58.4	40 41 10	12.1	11.99	···	1.13	2.56	1	8.065	7.416	7.162	···	
+51:2402	Gl 719		18 33 55.7	51 43 09	8.4	8.19	1.24	0.75	1.50	1	5.620	···	4.847	60.9 ± 0.7	1
G 205-29			18 35 17.7	41 29 14	12.0	11.78	···	0.97	2.11	1	8.455	7.940	7.716	57.0 ± 10.2	2
VBs 9	Gl 720B	3395	18 35 27.2	45 45 40	13.3	13.02	1.57	1.18	2.69	1	8.912	8.328	8.080	66.9 ± 2.0	2
335- 13			18 39 32.1	30 09 55	11.0	10.85	0.68	···	···	3	8.072	7.374	7.218	37.5 ± 1.7	1
+31:3330B		3402	18 40 55.1	31 31 52	11.4	11.63	1.60	0.99	2.12	1	8.224	7.625	7.392	31.5 ± 9.9	2.5
G 205-35			18 41 37.4	39 42 12	13.1	13.42	···	1.22	2.81	1	9.215	8.644	8.370	···	
R 145	G 206-40		18 41 59.0	31 49 49	10.5	11.27	···	1.08	2.40	1	7.538	6.964	6.715	88.1 ± 2.3	1
229- 30		3406	18 43 22.1	40 40 21	17.5	18.23	···	···	4.36	12	11.299	10.667	10.269	70.7 ± 0.8	2
141- 1		3409	18 45 52.3	52 27 40	15.4	15.13	···	1.21	2.76	1	10.979	10.493	10.217	49.2 ± 1.3	2
G 205-38			18 50 45.2	47 58 19	12.3	12.53	···	1.10	2.50	1	8.716	8.137	7.941	···	
G 205-40		3420	18 52 33.7	45 38 31	14.6	15.07	···	1.31	3.01	1	10.513	9.983	9.695	···	
G 205-47			18 56 26.2	46 22 53	13.4	13.95	···	1.23	2.80	1	9.615	9.060	8.742	···	
G 205-28			18 57 00.5	47 20 29	13.1	13.28	···	1.11	2.49	1	9.410	8.848	8.590	···	
336- 4	G 207-19		19 08 29.9	32 16 51	11.8	11.80	···	1.11	2.52	1	7.896	7.336	7.061	···	

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_{π}
G 207-22			19 12 29.3	35 33 52	12.2	12.02	1.56	1.06	2.34	1, 16	8.399	7.818	7.599	58.3 ± 2.9	2
W 1108		3472	19 34 54.9	53 15 22	11.8	12.20	1.64	1.08	2.39	1	8.587	8.005	7.703	72.1 ± 7.3	2
693- 14	G 92-17		19 38 32.2	-2 51 17	11.7	10.67	1.12	···	···	6	8.634	8.077	7.951	···	
869- 42			19 39 36.1	-26 45 06	11.2	10.49	1.39	···	···	3	7.494	6.802	6.631	44.8 ± 1.9	1
+58:2015B	Wo 9677B		19 56 24.9	59 09 21	13.7	13.51	···	1.07	2.48	1	9.668	9.155	8.913	···	
-20:5833	Gl 782	3526	20 10 19.6	-20 29 35	9.5	8.90	1.29	0.80	1.49	11	6.510	5.884	5.690	63.8 ± 1.5	1
870- 45		3528	20 10 55.5	-25 35 08	14.2	14.98	···	1.29	2.99	9	10.217	9.627	9.357	···	
R 754	Gl 784.1		20 13 51.7	13 23 19	11.7	11.30	1.37	···	···	3	8.299	7.622	7.464	37.5 ± 2.6	1
634- 22	G 24-12		20 16 21.9	-2 04 08	11.2	11.16	1.42	···	···	3	8.383	7.756	7.554	37.2 ± 2.7	1
-28:16676	Gl 791	3553	20 27 41.6	-27 44 50	10.8	11.47	1.49	1.08	2.43	11	7.721	7.078	6.861	77.9 ± 15	1
W 1351	G 144-16A		20 37 20.8	21 56 53	11.7	11.44	1.50	0.95	2.03	1	8.184	7.555	7.364	···	
-32:16135B	Gl 799B		20 41 51.1	-32 26 09	11.4	11.00	1.57	1.26	2.93	9	5.856	5.298	5.036	97.8 ± 4.7	1.5
-32:16135A	Gl 799A		20 41 51.1	-32 26 07	10.0	10.99	1.55	1.26	2.93	9	5.822	5.208	4.934	97.8 ± 4.7	1
G 144-39			20 48 52.4	19 43 04	12.5	13.37	···	1.17	2.68	1	9.224	8.596	8.398	29.8 ± 1.8	2
W 896	Gl 811.1	502	20 56 46.5	-10 26 53	10.9	11.47	1.45	1.06	2.37	11	7.796	7.143	6.888	49.3 ± 7.8	2
G 25-10		3604	20 57 16.2	12 00 26	12.8	12.34	1.41	···	···	6	9.383	8.810	8.550	···	
-33:15343	Wo 9714		21 01 39.0	-32 31 27	10.3	9.33	1.25	0.77	1.43	11	7.014	6.408	6.193	48.9 ± 1.7	1
+13:4614	G 145-13	3625	21 05 23.6	14 32 23	11.2	10.46	1.11	0.69	1.33	1	8.191	7.626	7.458	19.5 ± 2.2	1
341- 14			21 16 03.8	29 51 45	12.9	13.49	···	1.20	2.76	1	9.320	8.707	8.437	···	
R 776	LTT16240A		21 16 05.7	29 51 50	12.2	12.68	···	1.20	2.74	1	8.475	7.902	7.620	···	
697- 49	HD202819		21 18 39.2	-8 02 22	11.0	9.83	1.11	···	···	3	7.831	7.222	7.131	26.7 ± 2.0	1
757-260			21 19 28.5	-8 48 40	14.3	12.76	1.34	···	···	10	9.755	9.148	8.886	···	
286- 3	G 188-1		21 27 32.9	34 01 29	11.6	11.15	···	0.92	1.97	1	7.996	7.439	7.239	33.7 ± 4.5	1
873- 49	LTT8526		21 28 18.3	-22 18 32	11.7	12.21	1.56	···	···	4	8.527	7.935	7.642	···	
R 775	Gl 829A	508	21 29 36.7	17 38 35	10.3	10.31	1.61	1.13	2.59	9	6.278	5.730	5.446	148.3 ± 1.9	1
874- 10	Gl 836	513	21 39 00.8	-24 09 28	12.7	13.45	1.54	1.19	2.75	11	9.190	8.640	8.332	73.3 ± 12.0	2
G 126-30			21 44 07.9	17 04 37	14.6	14.81	···	1.33	3.07	1	10.063	9.443	9.152	···	
G 126-31			21 44 09.0	17 03 34	13.9	13.65	···	1.23	2.82	1	9.297	8.673	8.398	···	
W 937	G 26-27		21 45 00.7	-5 47 12	12.2	12.80	1.68	···	···	5	8.988	8.454	8.168	33.5 ± 19.9	2
G 126-35			21 46 19.3	14 37 55	11.3	10.76	···	0.73	1.44	1	8.427	7.802	7.649	19.0 ± 2.3	1
LHS 3713		3713	21 48 15.2	27 55 43	11.7	11.99	1.56	1.02	2.25	1	8.523	7.943	7.665	54.8 ± 4.4	2
R 209	Wo 9757		21 49 45.9	-11 40 56	11.9	10.85	1.39	0.87	1.68	11	8.199	7.547	7.346	33.9 ± 2.4	1
518- 58			21 51 48.3	13 36 15	13.1	13.93	···	1.29	2.96	1	9.334	8.764	8.452	···	
639- 1		516	21 56 55.1	-1 54 10	14.0	14.65	···	1.36	3.15	1	9.926	9.330	9.044	74.8 ± 3.2	3
G 215-30			21 59 21.9	41 51 32	13.0	12.76	···	1.11	2.47	1	···	8.386	8.148	···	
R 265	Gl 844		22 01 49.0	16 28 02	11.8	10.64	1.51	1.03	2.31	9	7.053	6.432	6.166	60.9 ± 2.1	1
819- 17	Gl 843	3744	22 02 00.6	-19 28 59	11.3	12.02	1.55	1.13	2.57	11	8.050	7.491	7.187	78.2 ± 11.7	2

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
519- 60	G 18-20		22 03 21.1	12 20 46	12.0	10.83	1.29	···	···	5	8.438	7.803	7.663	···	
G 214-12	USNO 571	6397	22 09 43.0	41 02 05	12.4	12.57	1.49	···	···	16	8.770	8.112	7.860	44.1 ± 3.1	2
819- 52	GJ 1265	3776	22 13 42.7	-17 41 08	12.9	13.57	···	1.30	2.99	1	8.983	8.441	8.129	96.0 ± 3.9	2
984- 2		3789	22 17 53.2	-36 11 19	13.7	14.20	···	1.20	2.76	9	9.933	9.361	9.101	···	
931- 40		3793	22 19 23.5	-28 23 20	14.1	14.80	···	1.18	2.82	9	10.158	9.644	9.348	···	
820- 12		3799	22 23 06.9	-17 36 25	12.4	13.26	···	1.41	3.22	1	8.231	7.625	7.307	134.4 ± 4.9	2
876- 25			22 28 23.3	-25 54 10	12.3	11.97	···	···	···	3	8.385	7.739	7.528	40.8 ± 7.7	1
876- 26			22 28 23.4	-25 54 07	11.5	11.97	···	···	···	3	8.177	7.595	7.347	40.8 ± 7.7	1
460- 60	Wo 9784		22 28 45.9	18 55 54	11.2	10.73	···	0.89	1.84	1	7.792	7.148	6.961	44.3 ± 1.8	1
760- 3		523	22 28 54.4	-13 25 17	16.1	17.26	2.03	···	4.26	12	10.780	10.231	9.846	88.8 ± 4.9	2
G 215-50	GJ 1270	524	22 29 48.8	41 28 47	12.8	13.24	···	1.23	2.84	1	8.872	8.331	8.059	72.5 ± 2.9	2
876- 34			22 34 00.4	-25 14 32	10.4	11.25	1.49	···	···	3	7.713	7.139	6.869	64.0 ± 2.5	1
344- 27			22 37 23.0	29 59 09	12.0	12.30	···	1.00	2.15	1	8.960	8.343	8.123	···	
-44:15006	LTT9141		22 40 43.3	-43 58 55	10.9	10.34	1.30	···	···	3	8.175	7.584	7.380	29.8 ± 3.0	1
G 189-32			22 42 18.3	31 16 48	13.4	13.88	···	1.15	2.62	1	9.856	9.267	8.996	···	
460- 56	GJ 1271	528	22 42 38.6	17 40 08	11.2	11.76	1.51	1.06	2.37	1	8.031	7.416	7.165	47.1 ± 3.0	1
984- 91	Gl 871.1A		22 44 57.9	-33 15 01	11.7	12.00	···	···	···	3	7.781	7.137	6.911	42.3 ± 3.4	1
+11:4875B	Gl 872B	3852	22 46 42.3	12 10 21	11.6	11.70	···	···	···	4	7.940	7.470	7.273	50.1 ± 10.6	2
+43:4305	Gl 873	3853	22 46 49.8	44 20 03	10.0	10.28	1.58	1.19	2.69	11,19	6.108	5.533	5.283	198.1 ± 2.1	1.5
344- 44		3854	22 47 54.0	31 52 15	12.6	12.92	1.62	1.12	2.51	1	9.097	8.521	8.242	···	
932- 83			22 49 08.4	-28 51 19	12.8	13.93	1.58	···	···	6	9.358	8.773	8.451	···	
344- 47			22 50 45.4	28 36 08	12.0	12.55	···	1.08	2.44	1	8.802	8.217	7.980	···	
Ox+31:70565	Gl 875.1	3861	22 51 53.4	31 45 15	11.1	11.63	···	1.12	2.52	11	7.746	7.143	6.882	70.3 ± 2.7	1
933- 25			22 55 43.9	-30 22 44	15.0	11.71	1.41	···	···	3	11.132	10.573	10.310	31.3 ± 3.1	1
985-130			23 05 43.5	-34 22 16	11.3	10.78	1.23	···	···	6	8.377	7.748	7.603	28.3 ± 2.1	1
642- 82	G 28-44		23 09 39.3	-1 58 23	13.1	12.66	1.54	···	···	5	8.675	8.003	7.804	···	
462- 19	G 67-53		23 17 28.0	19 36 46	11.6	12.10	1.59	···	···	5	8.007	7.388	7.169	···	
+45:4188	Gl 894.1		23 18 17.9	46 17 21	11.0	10.90	1.45	0.90	1.88	9	7.879	7.221	7.026	41.2 ± 1.9	1
G 216-39			23 18 43.5	50 03 26	13.2	13.03	···	1.00	2.19	1	9.691	9.052	8.777	···	
R 243	G 128-49		23 20 27.9	30 37 28	11.8	10.45	1.30	···	···	5	7.891	7.217	7.110	···	
462- 27		543	23 21 37.5	17 17 28	11.3	11.65	1.52	1.19	2.76	1	7.353	6.757	6.494	93.5 ± 3.6	1
+19:5093B			23 22 48.6	20 33 31	9.5	9.76	1.06	···	···	9	···	···	5.144	26.7 ± 0.9	1
522- 49		3948	23 26 32.4	12 09 33	12.1	12.66	1.54	1.08	2.42	1	8.928	8.257	8.088	38.3 ± 14.9	2
- 2:5958	Wo 9827		23 27 04.8	-1 17 10	11.0	10.37	1.27	···	···	3	7.987	7.370	7.190	30.3 ± 1.9	1
G 171-5		3980	23 35 44.3	41 58 03	11.1	11.25	1.46	0.94	1.99	1	8.157	7.430	7.260	36.7 ± 2.3	1
463- 23			23 37 35.9	16 22 03	14.9	16.14	···	···	3.69	7	10.482	9.959	9.587	···	
R 248	Gl 905	549	23 41 54.9	44 10 40	12.7	12.35	···	1.52	3.45	11	6.901	6.252	5.934	316.0 ± 1.1	2

Table 3—Continued

NLTT	Name	LHS	α (2000)	δ	m_r	V	B-V	V-R	V-I	Ref_{ph}	J	H	K_S	π_{trig}	Ref_π
G 68-37	GJ 1290		23 44 20.8	21 36 05	12.4	13.31	1.59	1.20	2.74	1, 16	9.067	8.425	8.229	45.4 $\pm$ 4.0	2
935- 18		4016	23 48 36.1	-27 39 38	11.9	12.40	···	1.08	2.43	9	8.587	8.024	7.743	···	
403- 16			23 49 53.8	27 21 40	13.5	14.09	···	1.21	2.73	1	9.887	9.307	9.038	···	
763- 12		4021	23 50 31.5	-9 33 32	13.0	13.31	1.62	1.22	2.79	1	8.950	8.381	8.042	···	
G 31-15		4046	23 55 25.9	-3 59 00	13.4	13.86	1.52	1.13	2.60	1	9.858	9.239	8.942	···	
- 6:6318	Gl 912	4047	23 55 39.8	-6 08 32	10.7	11.15	1.47	1.03	2.29	11	7.593	6.952	6.724	64.5 $\pm$ 9.7	2
704- 15	G 273-186		23 57 20.5	-12 58 48	12.0	12.93	···	1.20	2.75	1	8.661	8.082	7.808	···	
291- 34			23 57 49.8	38 37 46	11.7	12.64	···	1.11	2.54	1	8.719	8.072	7.881	···	
G 131-5	USNO 497	17	23 58 29.2	24 12 01	14.8	14.59	···	1.13	2.57	1	10.604	10.020	9.783	···	
+45:4378	Gl 913	4054	23 58 43.4	46 43 45	9.4	9.62	1.46	0.90	1.86	1	6.650	6.020	5.819	57.6 $\pm$ 2.8	1
149- 14	USNO 786	4057	23 59 49.3	47 45 44	15.1	16.10	1.87	···	···	16	10.857	10.255	9.911	51.9 $\pm$ 0.9	2

Note. — Column 1 lists the designation from the NLTT catalogue: R=Ross, W=Wolf, Oxf=Oxford catalogue. We have added Lowell Observatory Proper Motion Survey identifications (Giclas *et al.*, 1971) where appropriate.
Column 2 lists an alternative name, usually from the pCNS3; Column 3 gives the LHS number;
Columns 4 and 5 list the position of the 2MASS source;
Column 6 lists the r-band photometry from the NLTT catalogue;
Columns 7-10 list the optical photometry, and column 11 gives the source: 1 - Weis (1984, 1986, 1987, 1988, 1991, 1993, 1996, 1999); 3 - Hipparcos (ESA, 1997); 4 - pCNS3; 5 - Sandage & Kowal (1986); 6 - Ryan (1989, 1992); 7 - Fleming (1998); 8 - Patterson *et al.* (1998); 9 - Eggen (1966, 1975, 1980, 1987); 10 -Andruk *et al.* (1995); 11 - Bessell (1990); 12 - Leggett (1992); 13 - Dawson & Forbes (1989, 1992); 14 - Humphreys *et al.* (1991); 15 - Gullixson *et al.* (1995); 16 - USNO, Harrington *et al.* (1993) and refs within (BV only); 17 - Hartwick *et al.* (1984); 18 - Dahn *et al.*, 2000; 19 - Stauffer & Hartmann (1986); 20 - Upgren & Lu (1986); 21 - Reid (1990); 22 - Kron *et al.*, 1957; 23 - van Altena *et al.* (1995); 24 - Laing (1989).
Columns 12-14 list the 2MASS photometry;
Column 15 lists the trigonometric parallax, if available, and column 16 gives the source of the astrometry: 1 - Hipparcos (ESA, 1997); 1.5 - Hipparcos data for the primary in a multiple system; 2 - Yale catalogue, van Altena *et al.* (1995); 2.5 - Yale catalogue data for the primary star in a multiple system; 3 - Tinney (1996); 4 - Dahn *et al.*, 2000

Table 4. Distance Modulus Estimates for NLTT stars

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
+44:4548*	0.24±0.41	0.20±0.40	0.26±0.42	0.23±0.24	0.30±0.04	11.5±0.2	5.55	9.65	Y
+45:4408A	0.17±0.41	0.27±0.40	0.25±0.42	0.23±0.24	0.26±0.06	11.3±0.3	5.03	8.71	Y
+45:4408B*	0.05±0.41	0.33±0.40	-0.15±0.42	0.08±0.24	0.26±0.06	11.1±0.3	5.03	8.79	Y
G 158-27	-1.36±0.41	-1.49±0.22	-1.35±0.31	-1.42±0.16	-1.64±0.04	4.7±0.1	9.07	15.45	Y*
-27:16*	2.57±0.41	2.53±0.40	2.37±0.42	2.49±0.24	1.84±0.14	25.6±1.4	5.81	9.64	N
764- 87	-0.74±0.41	-0.94±0.75	-1.52±0.70	-1.01±0.32	-1.30±0.08	5.6±0.2	7.63	12.74	Y*
464- 42	1.13±0.41	1.25±0.40	1.11±0.42	1.17±0.24	0.31±0.37	14.3±1.5	7.01	11.82	Y
404- 61	-0.11±0.41	0.10±0.40	-0.74±0.70	-0.17±0.27	0.90±0.05	14.1±0.3	6.36	11.52	Y
404- 62*	0.97±0.41	0.95±0.75	0.21±0.70	0.76±0.32	0.90±0.05	15.0±0.4	7.23	12.33	Y
G 158-52	2.03±0.41	2.09±0.40	1.94±0.42	2.02±0.24	2.73±0.18	31.1±2.2	4.78	8.56	N
+43: 44B*	-1.19±0.41	-1.38±0.75	-1.96±0.70	-1.45±0.32	-2.25±0.02	3.6±0.0	8.16	13.27	Y*
644- 95	2.56±0.41	· · ·	· · ·	2.56±0.41	2.53±0.17	32.2±2.2	4.94	8.39	N
292- 67	0.25±0.41	0.31±0.22	0.40±0.31	0.32±0.16	0.50±0.10	12.3±0.5	8.89	15.64	Y
149- 56	1.83±0.41	1.74±0.40	2.52±0.42	2.02±0.24	· · ·	25.4±3.3	6.18	10.82	N
LHS 1068	0.96±0.41	0.62±0.22	0.42±0.31	0.64±0.16	1.39±0.19	16.6±1.2	7.81	13.46	Y
349- 18	1.40±0.41	0.75±0.22	1.09±0.70	1.00±0.19	· · ·	15.8±2.0	7.87	13.19	Y
G 217-51	1.37±0.41	0.79±0.22	1.14±0.70	1.02±0.19	1.64±0.15	19.4±1.2	7.45	12.81	Y
645- 35	0.18±0.41	0.49±0.40	-0.69±0.70	0.10±0.27	0.61±0.15	12.3±0.7	6.71	11.73	Y
G 172-1	0.78±0.41	0.83±0.75	0.14±0.70	0.62±0.32	· · ·	13.3±1.8	7.38	12.53	Y
G 270-1	1.34±0.41	1.30±0.40	1.63±0.42	1.42±0.24	1.03±0.15	17.1±1.0	6.79	11.57	Y
G 172-11	2.01±0.41	1.91±0.40	2.23±0.42	2.05±0.24	1.03±0.34	20.7±2.0	6.52	10.96	?+
G 172-13	1.40±0.41	1.20±0.40	1.60±0.42	1.40±0.24	1.79±0.55	20.3±2.3	5.82	10.18	?
G 172-14	2.39±0.41	2.39±0.40	2.22±0.42	2.33±0.24	2.61±0.90	30.2±3.7	5.22	9.00	N
G 218-5	1.86±0.41	1.96±0.40	1.73±0.42	1.85±0.24	1.81±0.10	23.1±1.0	5.07	8.66	N
G 172-15	1.80±0.41	1.63±0.40	2.17±0.42	1.86±0.24	0.96±0.40	19.7±2.1	6.58	11.13	Y
W 1056	0.45±0.41	0.52±0.40	0.41±0.42	0.46±0.24	0.48±0.11	12.5±0.6	6.12	10.60	Y
465- 62*	1.37±0.41	0.77±0.22	1.20±0.70	1.02±0.19	2.26±0.11	24.2±1.2	7.04	12.44	N
-27:194*	2.31±0.41	· · ·	· · ·	2.31±0.41	3.04±0.15	37.1±2.3	4.18	7.37	N
+23: 97	2.53±0.41	2.72±0.40	2.36±0.42	2.54±0.24	3.14±0.22	37.7±3.0	4.61	8.10	N
G 132-25	-0.10±0.41	· · ·	· · ·	-0.10±0.41	4.16±0.69	19.9±3.0	7.81	15.21	Y+
G 268-47	1.62±0.41	· · ·	· · ·	1.62±0.41	· · ·	21.1±3.7	7.46	12.78	?
+15:116	0.89±0.41	· · ·	· · ·	0.89±0.41	· · ·	15.1±2.6	6.59	11.36	Y+
G 32-50	1.93±0.41	· · ·	· · ·	1.93±0.41	· · ·	24.3±4.2	6.04	10.45	N
G 32-59	1.01±0.41	1.09±0.75	0.67±0.70	0.94±0.32	1.24±0.16	16.9±1.1	7.28	12.57	Y
706- 69	2.11±0.41	· · ·	· · ·	2.11±0.41	1.90±0.12	24.5±1.3	5.40	9.18	N
G 172-30	0.77±0.41	0.70±0.40	1.19±0.42	0.88±0.24	· · ·	15.0±1.9	6.37	11.07	Y+
G 172-34	2.45±0.41	2.48±0.40	2.44±0.42	2.46±0.24	3.09±0.26	36.3±3.1	4.64	8.17	N

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
USNO 492	-0.02±0.41	-0.11±0.22	-0.16±0.31	-0.11±0.16	0.00±0.11	9.9±0.5	8.48	14.54	Y*
G 69-47	-0.13±0.41	-0.13±0.22	-0.16±0.31	-0.14±0.16	0.50±0.08	11.8±0.4	8.18	14.42	Y
294- 50	2.00±0.41	···	···	2.00±0.41	···	25.2±4.3	8.36	14.32	N
466-235	1.21±0.41	1.27±0.40	1.21±0.42	1.23±0.24	1.72±0.13	20.7±1.1	5.55	9.87	?
-33:408*	1.94±0.41	···	···	1.94±0.41	2.29±0.14	27.6±1.7	4.82	8.46	N
G 2-21	2.20±0.41	···	···	2.20±0.41	···	27.6±4.8	5.75	9.97	N
467- 16	-0.48±0.41	-0.40±0.22	-0.63±0.31	-0.49±0.16	···	8.0±1.0	8.65	14.85	Y*
767- 22	-1.61±0.41	-1.97±0.22	-2.13±0.31	-1.94±0.16	-2.15±0.03	3.7±0.0	8.54	14.23	Y*
Oxf+25:4674	1.73±0.41	···	···	1.73±0.41	1.78±0.08	22.6±0.8	4.87	8.33	N
-36:491*	0.93±0.41	···	···	0.93±0.41	1.09±0.09	16.3±0.6	5.87	10.25	Y
R 324	1.95±0.41	1.87±0.40	2.00±0.42	1.94±0.24	2.14±0.72	25.1±3.0	5.51	9.56	N
883-221*	4.01±0.41	···	···	4.01±0.41	···	63.3±10.9	6.28	10.84	N
G 72-23	0.99±0.41	0.48±0.22	0.81±0.70	0.69±0.19	···	13.7±1.8	7.85	13.22	Y
708-416	0.99±0.41	1.21±0.40	0.10±0.70	0.88±0.27	0.77±0.49	14.7±1.6	7.14	12.15	Y
G 271-66	0.26±0.41	-0.02±0.22	-0.03±0.31	0.04±0.16	···	10.2±1.3	8.49	14.37	Y
R 555	1.98±0.41	1.56±0.40	2.07±0.42	1.87±0.24	1.24±0.12	19.2±1.0	6.23	10.38	Y
-23:693	0.01±0.41	0.07±0.40	0.15±0.42	0.08±0.24	0.22±0.03	11.0±0.2	4.96	8.67	Y
708-589	1.44±0.41	1.09±0.22	1.03±0.31	1.15±0.16	···	17.0±2.2	8.47	14.28	Y+
469- 50	2.69±0.41	···	···	2.69±0.41	···	34.5±6.0	4.72	7.91	N
30- 55	0.31±0.41	···	···	0.31±0.41	···	11.5±2.0	8.08	13.81	Y
469- 73	1.07±0.41	···	···	1.07±0.41	···	16.4±2.8	7.71	13.20	Y
G 3-40	2.56±0.41	···	···	2.56±0.41	···	32.5±5.6	5.75	9.95	N
G 173-39	0.79±0.41	0.92±0.40	0.79±0.42	0.84±0.24	···	14.7±1.9	6.74	11.63	Y
G 133-71	2.40±0.41	···	···	2.40±0.41	···	30.3±5.2	5.52	9.55	N
G 134-14	2.88±0.41	···	···	2.88±0.41	2.64±0.14	34.7±2.1	4.68	7.55	N
USNO 111	1.57±0.41	1.32±0.75	1.37±0.70	1.45±0.32	1.56±0.16	20.2±1.3	7.57	12.92	?
245- 10	-0.23±0.41	-0.09±0.22	-0.07±0.31	-0.11±0.16	0.08±0.02	10.3±0.1	8.91	15.83	Y
+47:612	0.26±0.41	···	···	0.26±0.41	0.38±0.03	11.9±0.2	5.19	9.03	Y
353- 74	2.10±0.41	2.03±0.40	2.21±0.42	2.11±0.24	···	26.4±3.4	5.49	9.51	N
354- 46	0.01±0.41	-0.50±0.22	-0.14±0.70	-0.29±0.19	-0.05±0.06	9.6±0.2	7.68	13.07	Y*
-44:775*	-0.56±0.41	-0.12±0.40	-0.83±0.42	-0.50±0.24	0.30±0.02	11.2±0.1	4.64	8.62	Y
410- 93	0.37±0.41	0.43±0.40	0.46±0.42	0.42±0.24	0.73±0.06	13.7±0.4	5.65	10.00	Y
197- 48*	3.64±0.41	···	···	3.64±0.41	···	53.3±9.2	6.59	11.36	N
651- 7	2.09±0.41	···	···	2.09±0.41	1.10±0.32	20.2±2.2	8.61	14.33	?
411- 6	1.10±0.41	···	···	1.10±0.41	0.82±0.11	15.0±0.7	9.28	15.98	Y
354-414*	0.81±0.41	···	···	0.81±0.41	1.53±0.21	18.1±1.5	8.56	15.22	Y
298- 42	1.28±0.41	0.53±0.22	0.86±0.70	0.80±0.19	···	14.5±1.9	7.88	13.16	Y

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
+33:529*	1.44±0.41	1.59±0.40	1.26±0.42	1.44±0.24	0.77±0.05	14.9±0.4	5.41	8.76	Y
354-423	1.51±0.41	1.52±0.40	1.74±0.42	1.59±0.24	2.12±0.16	24.4±1.5	5.12	9.17	N
354-326*	1.45±0.41	· · ·	· · ·	1.45±0.41	2.03±0.35	22.5±2.6	6.93	12.10	?
R 331	1.90±0.41	1.56±0.40	2.01±0.42	1.82±0.24	· · ·	23.1±3.0	6.54	11.22	N
78-18	3.42±0.41	· · ·	· · ·	3.42±0.41	1.95±0.32	33.0±3.6	7.37	12.11	N
G78-19	-0.06±0.41	0.05±0.40	0.19±0.42	0.06±0.24	0.94±0.15	13.5±0.8	5.19	9.50	Y
W 132	1.98±0.41	1.92±0.40	1.74±0.42	1.88±0.24	3.43±0.26	34.9±3.0	4.53	8.34	N
299- 36	1.07±0.41	· · ·	· · ·	1.07±0.41	0.87±0.30	15.5±1.6	9.15	15.81	Y
G 78-28	0.93±0.41	1.01±0.40	0.99±0.42	0.98±0.24	· · ·	15.7±2.0	6.61	11.41	Y
355- 51	1.91±0.41	· · ·	· · ·	1.91±0.41	1.63±0.16	21.9±1.5	5.94	10.13	N
412- 31	0.70±0.41	1.38±0.22	0.69±0.31	1.00±0.16	0.83±0.02	14.7±0.1	9.73	18.37	Y+
356- 14	1.30±0.41	1.64±0.40	0.81±0.42	1.26±0.24	· · ·	17.8±2.3	6.16	10.63	Y
300- 3	2.20±0.41	2.15±0.40	2.19±0.42	2.18±0.24	2.18±0.22	27.3±2.1	5.56	9.60	N
356-106	1.44±0.41	1.45±0.40	1.78±0.42	1.55±0.24	· · ·	20.4±2.6	6.85	11.85	?
G 5-43	1.87±0.41	1.72±0.40	1.76±0.42	1.79±0.24	1.44±0.13	20.4±1.1	6.34	10.73	?
653- 13	2.69±0.41	8.32±0.40	-0.79±0.31	3.04±0.21	· · ·	40.5±5.2	6.41	11.29	N
+16:502B*	1.09±0.41	1.19±0.40	1.05±0.42	1.11±0.24	1.06±0.09	16.4±0.6	5.58	9.64	Y
+16:502A	1.12±0.41	1.19±0.40	1.00±0.42	1.10±0.24	1.18±0.08	17.1±0.6	5.06	8.72	Y
+34:724	2.09±0.41	· · ·	· · ·	2.09±0.41	2.07±0.13	26.0±1.4	5.01	8.55	N
G 6-33	2.34±0.41	· · ·	· · ·	2.34±0.41	· · ·	29.4±5.1	5.53	9.58	N
+25:613*	0.60±0.41	0.67±0.40	0.59±0.42	0.62±0.24	0.82±0.06	14.4±0.4	5.04	8.81	Y
593- 68	0.64±0.41	0.96±0.22	0.65±0.31	0.79±0.16	· · ·	14.4±1.9	9.40	17.23	Y
W 227	0.03±0.41	-0.30±0.22	-0.65±0.31	-0.33±0.16	0.77±0.48	10.5±1.2	7.98	13.70	Y
- 1:565B*	0.69±0.41	· · ·	· · ·	0.69±0.41	0.99±0.07	15.5±0.5	5.99	10.53	Y
32- 16	1.59±0.41	1.59±0.40	1.82±0.42	1.67±0.24	· · ·	21.5±2.8	6.76	11.68	?+
G 8-17	1.22±0.41	· · ·	· · ·	1.22±0.41	· · ·	17.6±3.0	6.65	11.46	Y+
415- 18	1.50±0.41	· · ·	· · ·	1.50±0.41	· · ·	19.9±3.4	6.70	11.53	Y
SA 3-112	1.73±0.41	1.55±0.40	1.69±0.42	1.66±0.24	· · ·	21.4±2.8	6.10	10.51	?
+21:652	-0.05±0.41	0.10±0.40	· · ·	0.03±0.29	0.30±0.03	11.4±0.1	4.58	8.02	Y
G 39-29	0.08±0.41	0.07±0.75	-0.51±0.70	-0.08±0.32	· · ·	9.6±1.3	7.41	12.59	Y*
+20:802	0.60±0.41	0.87±0.40	0.24±0.42	0.58±0.24	0.65±0.04	13.4±0.2	4.50	7.45	Y
G 39-44	1.44±0.41	· · ·	· · ·	1.44±0.41	· · ·	19.4±3.4	5.67	9.82	Y
G 39-35	2.42±0.41	· · ·	· · ·	2.42±0.41	· · ·	30.4±5.3	6.39	11.03	N
USNO 223	0.37±0.41	0.39±0.22	0.09±0.31	0.29±0.16	0.74±0.18	13.0±0.9	8.43	14.63	Y
R 794	1.36±0.41	· · ·	· · ·	1.36±0.41	2.32±1.07	21.1±3.4	5.60	9.89	?
-21:1051*	-0.59±0.41	-1.04±0.40	· · ·	-0.81±0.29	-0.35±0.03	8.3±0.1	4.98	8.71	Y*
891- 52	2.40±0.41	2.06±0.75	1.48±0.70	2.06±0.32	· · ·	25.8±3.5	7.39	12.44	N

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
W 230	0.81±0.41	0.67±0.40	1.23±0.42	0.90±0.24	···	15.1±2.0	6.27	10.90	Y
R 388	1.79±0.41	1.77±0.40	1.71±0.42	1.76±0.24	2.36±1.66	23.4±3.0	6.11	10.61	N
G 85-48	1.90±0.41	2.18±0.40	1.23±0.70	1.86±0.27	···	23.6±3.0	7.20	12.32	N
VMa 17	0.73±0.41	0.51±0.40	0.81±0.42	0.68±0.24	0.76±0.16	14.0±0.9	5.79	10.03	Y
G99-12	0.45±0.41	0.50±0.40	0.59±0.42	0.51±0.24	0.57±0.03	13.0±0.2	4.31	7.09	Y
417-213	1.44±0.41	1.46±0.40	1.03±0.42	1.32±0.24	1.20±0.08	17.6±0.6	5.54	9.40	Y
R 43	2.55±0.41	···	···	2.55±0.41	···	32.4±5.6	5.78	10.02	N
R 46	0.12±0.41	0.33±0.40	0.36±0.42	0.27±0.24	0.47±0.28	11.9±1.1	6.54	11.44	Y
G 191-47	2.74±0.41	···	···	2.74±0.41	2.92±0.16	37.4±2.5	4.39	7.28	N
+53:935*	0.21±0.41	0.26±0.40	0.21±0.42	0.23±0.24	0.48±0.05	12.3±0.3	5.28	9.31	Y
658- 44	1.06±0.41	···	···	1.06±0.41	0.53±0.08	13.3±0.5	8.75	14.66	Y
57- 46	1.03±0.41	0.79±0.22	0.53±0.31	0.76±0.16	···	14.2±1.8	8.15	13.75	Y+
Grw+82:1111	-0.01±0.41	-0.09±0.40	-0.02±0.42	-0.04±0.24	-0.13±0.06	9.5±0.3	6.18	10.62	Y*
G 192-22	1.55±0.41	1.41±0.40	1.42±0.42	1.46±0.24	0.77±0.19	16.2±1.2	7.07	11.82	Y
G 101-35	1.86±0.41	1.92±0.40	1.88±0.42	1.89±0.24	···	23.8±3.1	5.99	10.38	N
205- 44	0.42±0.41	0.38±0.22	0.12±0.31	0.31±0.16	···	11.5±1.5	8.53	14.52	Y
VBs 16	1.85±0.41	1.68±0.40	0.80±0.70	1.55±0.27	0.62±0.06	14.4±0.4	8.01	13.00	Y
W 294	-1.28±0.41	-1.21±0.40	-1.31±0.42	-1.27±0.24	-1.29±0.02	5.5±0.1	6.57	11.32	Y*
+40:1758B*	1.80±0.41	1.79±0.40	1.78±0.42	1.79±0.24	2.15±0.26	24.9±2.2	5.20	9.12	N
G 107-36	1.62±0.41	1.47±0.75	1.34±0.70	1.51±0.32	···	20.0±2.7	7.57	12.89	?+
+30:1367A	1.40±0.41	···	···	1.40±0.41	1.35±0.08	18.7±0.6	4.92	8.32	Y
G 109-35	-0.56±0.41	-0.10±0.22	-0.79±0.31	-0.43±0.16	-0.55±0.06	7.8±0.2	8.72	15.05	Y*
255- 11	0.59±0.41	0.48±0.75	0.13±0.70	0.43±0.32	···	12.2±1.7	7.50	12.74	Y
Grw+68:2911	0.85±0.41	0.93±0.40	0.73±0.42	0.84±0.24	0.92±0.10	15.1±0.6	6.39	11.06	Y
R 874	1.62±0.41	···	···	1.62±0.41	···	21.1±3.6	5.77	10.00	?
G 87-23	3.15±0.41	···	···	3.15±0.41	2.23±1.02	37.7±6.1	5.01	8.25	N
G 107-48	1.05±0.41	0.71±0.75	0.36±0.70	0.77±0.32	···	14.3±2.0	7.48	12.63	Y
Grw+67:2334	1.39±0.41	···	···	1.39±0.41	1.24±0.09	17.9±0.7	5.77	9.90	Y
34-161	1.84±0.41	1.83±0.40	1.80±0.42	1.82±0.24	···	23.2±3.0	6.20	10.72	N
G109-55	-0.20±0.41	-0.27±0.40	-0.04±0.42	-0.17±0.24	0.45±0.07	11.7±0.3	5.85	10.49	Y
G 88-19	1.82±0.41	1.73±0.40	2.14±0.42	1.89±0.24	1.63±0.10	21.9±1.0	6.47	11.09	N
R 987	0.95±0.41	0.85±0.40	0.91±0.42	0.91±0.24	0.80±0.07	14.6±0.5	5.56	9.52	Y
R 878	1.03±0.41	1.21±0.40	0.77±0.42	1.01±0.24	1.43±0.10	18.4±0.8	5.61	9.93	Y
R 989*	-0.27±0.41	-0.03±0.40	-1.10±0.70	-0.36±0.27	0.36±0.06	11.1±0.3	6.54	11.58	Y
+36:1638	-0.48±0.41	-0.30±0.40	-0.50±0.42	-0.42±0.24	0.36±0.06	11.0±0.3	5.72	10.37	Y
G 88-35	2.61±0.41	2.97±0.40	0.98±0.70	2.39±0.27	1.97±0.36	27.5±2.8	6.71	11.29	N
G 88-36	2.15±0.41	2.38±0.40	1.91±0.42	2.15±0.24	2.70±0.27	30.7±2.7	4.86	8.56	N

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
+32:1582*	-0.08±0.41	···	···	-0.08±0.41	0.63±0.07	12.7±0.4	4.70	8.54	Y
G 90-16	1.74±0.41	1.62±0.40	1.78±0.42	1.71±0.24	2.76±0.17	30.0±2.0	5.18	9.45	N
+19:1797	2.70±0.41	2.74±0.40	2.76±0.42	2.73±0.24	3.10±0.15	39.4±2.4	4.16	6.95	N
17-243	2.72±0.41	2.73±0.40	2.86±0.42	2.77±0.24	···	35.8±4.6	5.89	10.24	N
+37:1776	2.86±0.41	···	···	2.86±0.41	3.08±0.19	40.0±3.0	4.25	7.01	N
424- 4	2.03±0.41	1.98±0.40	2.02±0.42	2.01±0.24	···	25.3±3.3	5.97	10.32	N
G 194-7	1.56±0.41	1.48±0.40	1.56±0.42	1.53±0.24	2.47±0.31	25.0±2.4	5.24	9.39	N
+34:1740	2.11±0.41	2.22±0.40	1.98±0.42	2.10±0.24	2.19±0.12	27.1±1.3	4.71	7.98	N
35-148*	3.56±0.41	3.39±0.40	3.49±0.42	3.48±0.24	2.64±0.54	43.2±4.9	6.88	11.60	N
366- 45	1.59±0.41	1.55±0.40	1.43±0.42	1.53±0.24	1.67±0.16	21.1±1.3	5.87	10.18	?
G 111-61	1.79±0.41	2.32±0.40	1.33±0.70	1.90±0.27	···	23.9±3.1	7.17	12.37	N
367- 67	2.09±0.41	···	···	2.09±0.41	···	26.2±4.5	6.04	10.45	N
G 90-52	1.47±0.41	···	···	1.47±0.41	···	19.6±3.4	5.63	9.75	Y
425- 14	2.49±0.41	2.23±0.40	2.36±0.42	2.36±0.24	1.72±0.16	24.5±1.5	6.69	11.17	N
Vyss.	1.50±0.41	1.44±0.40	1.46±0.42	1.47±0.24	1.46±0.30	19.6±1.8	5.38	9.27	Y
G 51-15	-2.27±0.41	-2.16±0.22	-2.36±0.31	-2.25±0.16	-2.20±0.02	3.6±0.0	9.44	17.11	Y*
725- 15	0.94±0.41	0.60±0.22	0.69±0.31	0.71±0.16	···	13.9±1.8	8.45	14.29	Y
35-219	1.04±0.41	1.09±0.40	1.26±0.42	1.13±0.24	0.44±0.31	14.4±1.4	7.17	12.14	Y+
425- 7*	-0.12±0.41	-0.44±0.22	-0.67±0.31	-0.44±0.16	0.54±0.16	10.9±0.7	7.54	13.13	Y
425- 72	-0.77±0.41	-0.30±0.75	-1.10±0.70	-0.74±0.32	0.54±0.16	10.5±0.7	6.52	11.80	Y
605- 23	1.78±0.41	1.52±0.22	1.85±0.31	1.68±0.16	1.47±0.02	19.8±0.2	9.67	16.96	Y
59-360	0.83±0.41	0.67±0.40	0.85±0.42	0.78±0.24	0.55±0.13	13.3±0.7	6.46	11.02	Y
+67:552*	0.34±0.41	0.41±0.40	0.40±0.42	0.38±0.24	0.71±0.04	13.6±0.2	4.88	8.65	Y
35-258	2.88±0.41	2.74±0.40	2.88±0.42	2.83±0.24	···	36.9±4.8	5.22	8.94	N
G 9-11	1.17±0.41	1.10±0.40	0.98±0.42	1.08±0.24	1.39±0.74	17.2±2.1	6.14	10.62	Y
G 40-31	1.56±0.41	···	···	1.56±0.41	···	20.5±3.5	7.36	12.61	?+
17-187	2.81±0.41	2.57±0.40	2.92±0.42	2.76±0.24	···	35.7±4.6	6.62	11.38	N
726- 6	1.94±0.41	2.22±0.40	1.11±0.70	1.86±0.27	···	23.6±3.0	7.09	12.13	N
R 622	2.01±0.41	1.68±0.40	1.70±0.42	1.80±0.24	1.28±0.14	19.4±1.1	6.08	10.11	Y
+28:1660B*	-0.07±0.41	-0.57±0.22	-0.06±0.70	-0.34±0.19	0.57±0.07	12.0±0.4	7.25	12.74	Y
666- 9	0.00±0.41	1.37±0.22	-0.22±0.31	0.54±0.16	-0.35±0.03	8.8±0.1	10.24	19.07	Y*
666- 11	1.81±0.41	1.03±0.22	1.83±0.31	1.47±0.16	···	19.7±2.5	9.34	15.94	Y+
LP426-40	-2.75±0.41	···	···	-2.75±0.41	-1.41±0.03	5.0±0.1	8.37	16.41	Y*
165- 10*	-0.10±0.41	-0.50±0.22	-0.69±0.31	-0.46±0.16	0.07±0.06	9.9±0.3	7.77	13.34	Y*
+15:1957B*	0.89±0.41	···	···	0.89±0.41	1.31±0.13	17.5±1.0	4.70	8.28	Y
60-179	0.78±0.41	0.77±0.40	-0.27±0.70	0.54±0.27	0.04±0.25	11.3±1.0	7.42	12.38	Y
645- 23	0.76±0.41	0.35±0.22	0.94±0.70	0.57±0.19	···	13.0±1.7	8.05	13.62	Y

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
60-205	2.15±0.41	1.80±0.40	2.22±0.42	2.05±0.24	···	25.7±3.3	6.35	10.91	N
G 47-28	1.00±0.41	1.12±0.40	1.46±0.42	1.19±0.24	2.22±0.68	20.0±2.4	6.04	10.77	?
G 47-31	2.33±0.41	1.92±0.40	2.29±0.42	2.18±0.24	···	27.2±3.5	5.95	10.19	N
G 47-33	1.45±0.41	···	···	1.45±0.41	···	19.5±3.4	5.96	10.32	Y
G 47-34	1.88±0.41	···	···	1.88±0.41	···	23.8±4.1	6.78	11.67	?+
G 115-71	0.80±0.41	0.51±0.22	0.89±0.70	0.66±0.19	···	13.5±1.7	7.87	13.36	Y
G 161-34	1.84±0.41	1.25±0.22	1.81±0.70	1.52±0.19	1.09±0.15	17.7±1.1	8.32	13.81	Y
370- 26	1.10±0.41	1.04±0.22	1.24±0.31	1.12±0.16	···	16.7±2.2	8.86	15.31	Y+
314- 20*	2.06±0.41	···	···	2.06±0.41	1.24±0.03	18.3±0.3	8.13	13.39	Y
728- 7	3.56±0.41	···	···	3.56±0.41	···	51.5±8.9	6.96	11.96	N
Grw+70:4336	-0.12±0.41	-0.02±0.40	0.05±0.42	-0.03±0.24	0.31±0.06	11.3±0.3	6.21	10.98	Y
G 117-36	2.50±0.41	···	···	2.50±0.41	3.51±0.51	38.8±5.3	4.43	7.82	N
+70:578	2.33±0.41	···	···	2.33±0.41	2.53±0.10	31.5±1.4	4.33	7.21	N
G 116-60	2.14±0.41	2.21±0.40	2.51±0.42	2.28±0.24	···	28.6±3.7	6.58	11.44	N
W 327	1.97±0.41	2.30±0.40	0.56±0.70	1.78±0.27	···	22.7±2.9	6.68	11.39	?+
W 330	1.63±0.41	1.51±0.40	1.62±0.42	1.58±0.24	···	20.7±2.7	6.48	11.15	?
G 49-32	1.08±0.41	0.55±0.22	1.02±0.70	0.78±0.19	···	14.3±1.9	7.96	13.42	Y
G 146-5	1.74±0.41	1.77±0.75	1.08±0.70	1.56±0.32	···	20.6±2.8	7.37	12.53	?
G 43-23	1.15±0.41	···	···	1.15±0.41	···	17.0±2.9	7.65	13.08	Y
F I-285	2.04±0.41	1.94±0.40	2.03±0.42	2.00±0.24	1.73±0.13	23.1±1.2	5.60	9.52	N
G 118-43	1.15±0.41	1.65±0.40	0.66±0.70	1.23±0.27	···	17.7±2.3	7.18	12.37	Y
+20:2465*	-2.11±0.41	-1.79±0.40	-2.07±0.42	-1.99±0.24	-1.55±0.03	4.8±0.1	6.17	10.99	Y*
W 356	2.31±0.41	2.49±0.40	2.11±0.42	2.31±0.24	2.45±0.12	30.4±1.5	4.79	8.21	N
G 54-26	1.11±0.41	1.24±0.40	1.57±0.42	1.30±0.24	···	18.2±2.4	6.84	11.89	Y
G 118-66	1.59±0.41	1.67±0.40	1.71±0.42	1.66±0.24	···	21.4±2.8	6.39	11.07	?
37-179	0.49±0.41	0.42±0.40	-0.86±0.70	0.16±0.27	0.60±0.11	12.5±0.6	6.66	11.47	Y
316-400	1.89±0.41	···	···	1.89±0.41	···	23.8±4.1	9.10	15.85	?+
263- 15	0.29±0.41	-0.47±0.22	-0.13±0.70	-0.19±0.19	0.07±0.05	10.2±0.2	7.66	12.94	Y
731- 58	-1.56±0.41	-1.77±0.22	-1.71±0.31	-1.70±0.16	-1.72±0.04	4.5±0.1	9.68	17.44	Y*
263- 29	0.17±0.41	-0.40±0.22	-0.03±0.70	-0.17±0.19	-0.06±0.07	9.6±0.3	7.80	13.18	Y*
LHS 2317	0.99±0.41	1.29±0.40	0.18±0.70	0.93±0.27	1.80±0.14	20.1±1.2	6.50	11.55	?
+70:639	1.72±0.41	1.81±0.40	1.55±0.42	1.69±0.24	1.81±0.08	22.8±0.8	4.93	8.48	N
G 147-11	1.67±0.41	···	···	1.67±0.41	1.74±0.30	22.0±2.3	7.96	13.65	?
R 104	-0.71±0.41	-0.75±0.40	-0.70±0.42	-0.72±0.24	-0.89±0.02	6.7±0.1	6.38	10.90	Y*
37-257	2.62±0.41	2.22±0.40	2.20±0.42	2.35±0.24	···	29.5±3.8	5.88	9.98	N
+44:2051A	-0.76±0.41	-0.95±0.40	-0.90±0.42	-0.87±0.24	-1.38±0.07	5.5±0.2	6.03	10.05	Y*
+44:2051B*	-1.17±0.41	-1.38±0.22	-1.03±0.31	-1.22±0.16	-1.38±0.07	5.4±0.2	9.18	15.79	Y*

Table 4—Continued

NLTT	$(m\text{-}M)_{V-K}$	$(m\text{-}M)_{V-I}$	$(m\text{-}M)_{I-J}$	$(m\text{-}M)_{ph}$	$(m\text{-}M)_{\pi}$	d_f(pc)	M_K	M_V	20pc?
F I-645	1.86±0.41	1.90±0.40	1.99±0.42	1.92±0.24	2.61±0.17	29.6±2.0	4.86	8.75	N
CW UMa	0.70±0.41	0.70±0.40	0.80±0.42	0.73±0.24	0.83±0.37	14.3±1.4	6.71	11.61	Y
+74:456C*	0.98±0.41	···	···	0.98±0.41	0.83±0.04	14.8±0.3	6.15	10.55	Y
432- 24	1.48±0.41	1.36±0.40	1.74±0.42	1.52±0.24	···	20.2±2.6	6.57	11.35	?
169- 22	0.26±0.41	-0.08±0.22	0.38±0.31	0.15±0.16	···	10.7±1.4	9.08	15.64	Y+
+66:717	0.24±0.41	0.24±0.40	-0.02±0.42	0.16±0.24	-0.24±0.08	9.3±0.3	5.66	9.48	Y*
G 176-34	1.57±0.41	1.14±0.22	0.88±0.31	1.16±0.16	···	17.1±2.2	8.31	13.92	Y+
673- 13	1.55±0.41	1.19±0.22	1.67±0.70	1.37±0.19	···	18.8±2.4	7.95	13.48	Y
G 122-34	1.31±0.41	1.45±0.40	1.40±0.42	1.39±0.24	···	18.9±2.4	6.79	11.73	Y
+40:2442	1.71±0.41	1.89±0.40	1.51±0.42	1.71±0.24	1.94±0.08	23.9±0.8	4.72	8.15	N
R 112	1.96±0.41	1.99±0.40	2.06±0.42	2.00±0.24	···	25.2±3.2	6.09	10.57	N
R 115	1.59±0.41	···	···	1.59±0.41	···	20.8±3.6	6.37	10.99	?
375- 25	1.37±0.41	1.69±0.40	0.84±0.70	1.38±0.27	···	18.9±2.4	7.26	12.45	Y
433- 47	1.29±0.41	···	···	1.29±0.41	···	18.1±3.1	6.97	11.98	Y+
38-393	1.18±0.41	1.40±0.75	0.60±0.70	1.08±0.32	···	16.4±2.3	7.35	12.52	Y
+29:2228	1.99±0.41	2.14±0.40	1.83±0.42	1.99±0.24	2.29±0.13	27.6±1.5	4.79	8.33	N
G 122-58	1.16±0.41	1.03±0.75	0.21±0.31	0.70±0.24	···	13.8±1.8	8.01	13.38	Y
G 122-60	1.92±0.41	1.86±0.40	1.77±0.42	1.85±0.24	···	23.4±3.0	5.93	10.22	N
SA 56-27	2.25±0.41	1.71±0.40	2.31±0.42	2.09±0.24	1.53±0.18	22.3±1.5	6.65	11.12	N
G 198-19	2.24±0.41	2.60±0.40	1.69±0.70	2.25±0.27	···	28.2±3.6	7.22	12.40	N
R 689	0.66±0.41	0.87±0.75	0.07±0.70	0.55±0.32	1.10±0.55	14.2±1.7	7.14	12.31	Y
G 123-8	2.07±0.41	···	···	2.07±0.41	1.64±0.09	22.0±0.9	5.35	8.89	N
+55:1519B*	1.55±0.41	···	···	1.55±0.41	0.62±0.48	16.8±2.3	7.28	12.21	Y
U 40- 83	1.63±0.41	1.57±0.40	1.62±0.42	1.60±0.24	2.34±0.55	23.6±2.7	5.41	9.54	N
G 123-16	2.16±0.41	2.02±0.40	2.41±0.42	2.20±0.24	···	27.5±3.5	5.59	9.69	N
554- 64	1.85±0.41	2.01±0.40	1.63±0.42	1.84±0.24	1.67±0.17	22.2±1.4	6.68	11.43	N
+29:2279*	1.51±0.41	1.50±0.40	1.74±0.42	1.58±0.24	1.96±0.10	23.6±1.0	4.94	8.78	N
R 690	0.96±0.41	0.93±0.40	0.92±0.42	0.93±0.24	1.28±0.09	17.4±0.7	5.91	10.40	Y
+21:2415*	2.74±0.41	···	···	2.74±0.41	3.26±0.15	42.1±2.7	4.08	6.90	N
64-194*	0.71±0.41	0.51±0.40	0.68±0.42	0.63±0.24	0.57±0.17	13.1±0.9	6.21	10.66	Y
R 948	1.03±0.41	···	···	1.03±0.41	···	16.1±2.8	5.76	9.97	Y
G 123-35	1.01±0.41	1.02±0.40	1.58±0.42	1.20±0.24	···	17.4±2.2	6.73	11.70	Y
130-225	2.30±0.41	2.29±0.40	1.28±0.70	2.07±0.27	2.00±0.06	25.2±0.6	7.22	12.20	N
W 419*	3.77±0.41	···	···	3.77±0.41	···	56.7±9.8	5.09	8.73	N
20-375	2.70±0.41	···	···	2.70±0.41	···	34.7±6.0	7.68	13.14	N
LHS 2613	0.19±0.41	0.37±0.40	0.52±0.42	0.36±0.24	0.13±0.27	11.2±1.0	7.01	12.07	Y+
GJ 1163	1.40±0.41	1.56±0.40	1.59±0.42	1.52±0.24	···	20.1±2.6	6.57	11.39	?

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
R 991	0.99±0.41	1.05±0.40	1.08±0.42	1.04±0.24	1.51±0.10	19.0±0.8	5.83	10.37	Y
436- 19*	3.11±0.41	3.20±0.40	3.06±0.42	3.12±0.24	···	42.1±5.4	4.88	8.31	N
G 199-51	2.26±0.41	2.20±0.40	2.37±0.42	2.28±0.24	···	28.5±3.7	6.33	10.94	N
G 123-84	1.54±0.41	1.64±0.40	1.92±0.42	1.70±0.24	···	21.9±2.8	6.46	11.25	?+
322-836	0.80±0.41	0.64±0.22	0.08±0.31	0.50±0.16	0.31±0.41	12.1±1.3	8.18	13.73	Y
G 177-25	0.45±0.41	0.09±0.22	0.17±0.31	0.20±0.16	···	11.0±1.4	8.47	14.32	Y+
378-774	1.21±0.41	1.30±0.40	1.49±0.42	1.33±0.24	···	18.5±2.4	6.68	11.58	Y
G 164-62	1.96±0.41	1.87±0.40	1.71±0.42	1.85±0.24	1.67±0.10	22.0±0.9	5.64	9.57	N
+35:2436A	0.08±0.41	0.09±0.40	-0.06±0.42	0.04±0.24	0.60±0.10	12.4±0.5	5.08	9.06	Y
R 1007	0.57±0.41	0.75±0.40	0.45±0.42	0.59±0.24	1.20±0.09	16.3±0.6	5.31	9.56	Y
+35:2409*	0.97±0.41	1.03±0.40	0.92±0.42	0.97±0.24	1.03±0.06	16.0±0.5	5.53	9.60	Y
G 63-36	0.55±0.41	···	···	0.55±0.41	1.06±0.21	15.0±1.2	5.93	10.50	Y
438- 8*	0.55±0.41	···	···	0.55±0.41	1.06±0.21	15.0±1.2	5.93	10.50	Y
66-284	2.20±0.41	2.68±0.40	1.60±0.70	2.25±0.27	···	28.2±3.6	7.12	12.26	N
R 1021	1.89±0.41	1.92±0.40	1.77±0.42	1.86±0.24	···	23.6±3.0	6.26	10.80	N
+46:1889	0.86±0.41	0.67±0.40	0.75±0.42	0.76±0.24	0.61±0.05	13.4±0.3	5.65	9.60	Y
R 1026	0.69±0.41	0.97±0.40	-0.12±0.70	0.62±0.27	0.98±0.13	14.9±0.8	6.86	11.91	Y
USNO 735	2.14±0.41	···	···	2.14±0.41	1.76±0.28	24.2±2.4	7.92	13.38	N
R 1015	0.01±0.41	0.17±0.40	-0.93±0.70	-0.14±0.27	-0.20±0.06	9.1±0.3	7.16	12.16	Y*
+15:2620*	-1.08±0.41	-1.27±0.40	···	-1.18±0.29	-1.33±0.03	5.5±0.1	5.75	9.77	Y*
R 1019	1.06±0.41	0.96±0.75	0.61±0.70	0.91±0.32	···	15.2±2.1	7.50	12.74	Y
912- 32	1.52±0.41	1.04±0.22	1.90±0.70	1.33±0.19	···	18.4±2.4	8.25	13.97	Y
Ox+25:86067	2.95±0.41	3.05±0.40	2.76±0.42	2.92±0.24	3.08±0.20	40.2±2.9	4.60	7.72	N
+18:2811*	2.44±0.41	2.27±0.40	2.65±0.42	2.45±0.24	2.84±0.71	32.6±3.9	4.55	7.69	N
+47:2112B*	-0.86±0.41	···	···	-0.86±0.41	0.26±0.10	10.2±0.4	5.35	9.91	Y
+47:2112A	0.18±0.41	-0.46±0.40	1.24±0.42	0.31±0.24	0.26±0.10	11.3±0.5	5.13	8.90	Y
97-556	1.78±0.41	1.80±0.75	1.19±0.70	1.62±0.32	···	21.1±2.9	7.40	12.58	?+
Grw+76:4935	2.03±0.41	1.82±0.40	2.04±0.42	1.96±0.24	1.98±0.43	24.8±2.7	5.58	9.62	N
R 992	0.83±0.41	0.81±0.40	0.74±0.42	0.79±0.24	1.06±0.23	15.5±1.2	6.28	10.92	Y
325- 15	-0.13±0.41	-0.64±0.22	-0.10±0.70	-0.40±0.19	1.03±0.51	10.6±1.2	7.48	12.99	Y
381- 94	2.23±0.41	2.26±0.40	2.15±0.42	2.22±0.24	3.21±0.32	34.7±3.3	4.96	8.91	N
439-442	0.50±0.41	···	···	0.50±0.41	···	12.6±2.2	7.87	13.45	Y+
220- 78	2.39±0.41	2.35±0.40	2.21±0.42	2.32±0.24	2.85±0.23	33.4±2.7	5.09	8.95	N
270- 67	2.05±0.41	1.58±0.22	1.53±0.31	1.68±0.16	···	21.6±2.8	8.62	14.49	?+
G 178-23	3.00±0.41	2.91±0.40	3.36±0.42	3.09±0.24	···	41.4±5.3	5.44	9.48	N
174-340	1.49±0.41	···	···	1.49±0.41	1.75±0.29	21.4±2.2	8.80	15.34	?
+16:2658*	0.58±0.41	0.43±0.40	0.80±0.42	0.60±0.24	0.77±0.07	14.1±0.4	5.68	9.94	Y

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
440- 38	1.14±0.41	1.29±0.75	0.60±0.70	1.03±0.32	· · ·	16.1±2.2	7.38	12.58	Y
Grw+68:5067	2.55±0.41	2.43±0.40	2.31±0.42	2.43±0.24	· · ·	30.6±4.0	5.63	9.66	N
Grw+66:4437	0.53±0.41	0.52±0.40	0.40±0.42	0.49±0.24	-0.03±0.29	11.1±1.0	6.26	10.60	Y
858- 23*	0.62±0.41	· · ·	· · ·	0.62±0.41	· · ·	13.3±2.3	9.03	15.68	Y
G 200-58	1.57±0.41	1.04±0.22	1.56±0.70	1.28±0.19	· · ·	18.0±2.3	8.01	13.49	Y+
41-353	2.83±0.41	2.71±0.40	2.85±0.42	2.80±0.24	· · ·	36.3±4.7	6.19	10.68	N
R 994	2.07±0.41	2.11±0.40	2.00±0.42	2.06±0.24	2.61±0.30	29.3±2.7	5.41	9.55	N
501- 31	0.88±0.41	· · ·	· · ·	0.88±0.41	· · ·	15.0±2.6	6.21	10.73	Y
441- 33	1.63±0.41	1.01±0.22	1.37±0.31	1.27±0.16	· · ·	18.0±2.3	8.59	14.45	Y
441- 34*	1.44±0.41	2.25±0.22	1.13±0.31	1.70±0.16	· · ·	21.9±2.8	9.23	16.90	?
914- 54	-0.73±0.41	-0.81±0.22	-0.69±0.31	-0.75±0.16	-0.99±0.07	6.5±0.2	9.86	17.99	Y*
R 995	3.27±0.41	2.70±0.40	3.46±0.42	3.14±0.24	· · ·	42.4±5.5	5.66	9.70	N
R 1042	2.07±0.41	1.91±0.40	2.00±0.42	1.99±0.24	· · ·	25.0±3.2	5.84	10.06	N
R 1051	1.23±0.41	1.12±0.40	1.11±0.42	1.15±0.24	1.22±0.05	17.5±0.4	5.66	9.78	Y
135- 97	1.39±0.41	1.43±0.40	2.06±0.42	1.62±0.24	· · ·	21.1±2.7	6.73	11.73	?
442- 37	2.34±0.41	2.24±0.40	2.88±0.42	2.48±0.24	2.76±0.42	33.1±3.5	5.27	9.30	N
R 508	0.65±0.41	0.03±0.22	0.53±0.70	0.29±0.19	0.35±0.08	11.7±0.4	7.95	13.38	Y
G 167-47	1.12±0.41	0.70±0.22	1.13±0.70	0.89±0.19	· · ·	15.1±1.9	7.92	13.39	Y
R 513	1.96±0.41	1.53±0.40	1.93±0.42	1.80±0.24	0.77±0.07	15.5±0.5	7.00	11.39	Y
VBs 24A	1.57±0.41	0.79±0.40	2.13±0.42	1.49±0.24	0.65±0.15	15.3±0.9	6.63	10.99	Y
177-102	1.15±0.41	-0.23±0.22	2.42±0.42	0.80±0.18	· · ·	14.5±1.9	7.39	12.44	Y+
274- 8	0.27±0.41	0.27±0.75	0.14±0.70	0.23±0.32	1.15±0.14	14.9±0.9	6.96	12.34	Y
R 806	0.61±0.41	0.83±0.40	0.68±0.42	0.71±0.24	1.42±0.16	17.2±1.1	5.90	10.58	Y
274- 21*	1.12±0.41	1.47±0.40	0.30±0.70	1.08±0.27	2.00±0.17	21.5±1.4	6.47	11.51	N
G 180-11	-0.03±0.41	-0.08±0.22	-0.33±0.31	-0.15±0.16	· · ·	9.3±1.2	8.13	13.83	Y*
G 180018	1.17±0.41	1.24±0.40	1.22±0.42	1.21±0.24	· · ·	17.5±2.3	6.65	11.48	Y
G 180-21	1.74±0.41	1.77±0.40	1.92±0.42	1.81±0.24	· · ·	23.0±3.0	6.53	11.31	N
329- 18	1.50±0.41	1.36±0.40	1.45±0.42	1.44±0.24	1.06±0.51	18.2±2.0	6.59	11.22	Y
385- 18	0.08±0.41	-0.02±0.75	-0.46±0.70	-0.09±0.32	-0.01±0.07	9.9±0.3	7.39	12.59	Y*
224- 38	0.94±0.41	0.94±0.22	1.04±0.31	0.97±0.16	· · ·	15.6±2.0	9.13	15.99	Y+
275- 6	1.56±0.41	· · ·	· · ·	1.56±0.41	1.76±0.28	21.7±2.2	6.05	10.55	?
444- 35	1.78±0.41	· · ·	· · ·	1.78±0.41	1.26±0.13	19.0±1.1	6.85	11.53	Y
275- 83*	2.16±0.41	· · ·	· · ·	2.16±0.41	2.45±0.08	30.2±1.0	4.30	7.25	N
+55:1823	0.02±0.41	0.07±0.40	-0.19±0.42	-0.03±0.24	1.58±0.05	18.4±0.4	4.44	8.64	Y
G 202-45	-0.06±0.41	-0.31±0.40	-0.42±0.42	-0.26±0.24	-0.47±0.02	8.1±0.1	6.37	10.74	Y*
G 202-48	-0.02±0.41	-0.15±0.40	-0.26±0.42	-0.14±0.24	-0.91±0.02	6.7±0.0	6.69	10.97	Y*
386- 49	1.19±0.41	1.05±0.40	1.52±0.42	1.25±0.24	· · ·	17.8±2.3	6.34	10.99	Y

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
G 138-28	2.33±0.41	···	···	2.33±0.41	2.10±0.20	27.2±2.2	4.99	8.35	N
445- 22	2.13±0.41	2.02±0.40	2.33±0.42	2.16±0.24	···	27.0±3.5	6.37	11.02	N
LHS 3210	1.80±0.41	1.58±0.40	1.75±0.42	1.71±0.24	1.36±0.12	19.6±1.0	6.71	11.34	Y
275- 68	0.53±0.41	0.51±0.75	-0.07±0.70	0.36±0.32	···	11.8±1.6	7.41	12.59	Y
R 812	1.32±0.41	1.32±0.40	1.50±0.42	1.38±0.24	1.42±0.21	19.1±1.4	5.79	10.09	Y
+33:2777	-0.18±0.41	0.09±0.40	-0.61±0.42	-0.23±0.24	-0.05±0.02	9.7±0.1	4.76	8.16	Y*
446- 6	0.85±0.41	0.86±0.40	1.17±0.42	0.96±0.24	1.10±0.13	16.3±0.8	6.04	10.58	Y
R 644	2.05±0.41	1.97±0.40	2.23±0.42	2.08±0.24	1.40±0.08	20.4±0.8	5.57	9.20	?
G 139-3	0.16±0.41	0.32±0.75	1.38±0.42	0.67±0.27	···	13.6±1.8	7.07	12.46	Y
43-338	2.48±0.41	2.19±0.40	2.58±0.42	2.41±0.24	···	30.4±3.9	5.54	9.53	N
G 203-42	-0.02±0.41	-0.30±0.22	-0.59±0.31	-0.33±0.16	-0.11±0.05	9.4±0.2	8.08	13.73	Y*
446- 35	1.57±0.41	1.44±0.40	1.65±0.42	1.55±0.24	1.18±0.12	18.1±0.9	6.49	11.01	Y
R 863	0.68±0.41	0.74±0.40	0.79±0.42	0.74±0.24	0.83±0.09	14.5±0.6	6.21	10.82	Y
G 203-47	-0.92±0.41	-0.37±0.40	-1.22±0.70	-0.77±0.27	-0.62±0.05	7.5±0.2	7.12	12.41	Y*
W 654	0.07±0.41	0.19±0.40	0.17±0.42	0.15±0.24	0.40±0.06	11.8±0.3	6.41	11.25	Y
447- 21	2.35±0.41	2.19±0.40	2.58±0.42	2.37±0.24	···	29.8±3.8	6.10	10.56	N
447- 38	1.46±0.41	1.57±0.40	1.58±0.42	1.54±0.24	···	20.3±2.6	6.64	11.48	?
F 48	0.75±0.41	0.60±0.40	0.78±0.42	0.71±0.24	0.46±0.05	12.5±0.3	6.42	10.91	Y
G 203-63	2.22±0.41	2.11±0.75	1.51±0.70	2.00±0.32	1.16±0.19	19.7±1.4	7.92	13.06	Y
70-297	2.64±0.41	2.49±0.40	2.90±0.42	2.67±0.24	···	34.2±4.4	6.34	10.98	N
G 181-42	2.61±0.41	2.47±0.40	2.75±0.42	2.60±0.24	3.04±0.10	38.5±1.6	5.96	10.54	N
G 139-29	2.28±0.41	···	···	2.28±0.41	1.50±0.12	21.6±1.1	7.23	12.02	N
180- 17	1.87±0.41	1.78±0.40	2.20±0.42	1.95±0.24	2.24±0.23	26.5±2.1	6.06	10.64	N
+68:946	-1.85±0.41	-1.96±0.40	···	-1.91±0.29	-1.72±0.01	4.5±0.0	6.26	10.90	Y*
+43:2796	-0.20±0.41	-0.24±0.40	-0.08±0.42	-0.18±0.24	-0.11±0.02	9.5±0.1	6.08	10.57	Y*
G 182-34	2.19±0.41	2.17±0.40	2.44±0.42	2.27±0.24	2.24±0.18	28.2±1.9	6.64	11.47	N
71- 79	3.39±0.41	3.36±0.40	3.26±0.42	3.34±0.24	···	46.5±6.0	6.15	10.61	N
USNO 260	0.61±0.41	0.42±0.22	0.19±0.31	0.39±0.16	0.39±0.10	12.0±0.5	8.50	14.40	Y
G 204-57	1.09±0.41	0.98±0.75	0.51±0.70	0.90±0.32	0.27±0.09	12.1±0.5	7.94	13.13	Y
USNO552	0.75±0.41	0.85±0.40	0.58±0.42	0.73±0.24	0.27±0.09	11.9±0.5	6.82	11.50	Y
G 205-19	2.11±0.41	2.15±0.40	2.29±0.42	2.18±0.24	2.74±0.18	32.1±2.2	5.10	9.14	N
R 708	0.51±0.41	0.71±0.40	-0.40±0.70	0.38±0.27	···	11.9±1.5	7.10	12.11	Y
LHS 3385	2.20±0.41	2.12±0.40	2.23±0.42	2.18±0.24	2.02±0.10	25.9±1.1	5.40	9.21	N
G 205-28	0.48±0.41	0.64±0.40	0.85±0.42	0.65±0.24	···	13.5±1.7	6.51	11.34	Y
+51:2402	0.02±0.41	0.36±0.40	-0.42±0.42	-0.01±0.24	1.08±0.03	15.8±0.2	3.85	7.20	Y
G 205-29	2.15±0.41	1.91±0.40	1.87±0.42	1.98±0.24	1.22±0.43	21.5±2.3	6.05	10.11	?
VBs 9*	1.21±0.41	1.24±0.40	1.45±0.42	1.30±0.24	0.87±0.07	15.5±0.5	7.13	12.07	Y

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
335- 13	2.14±0.41	···	···	2.14±0.41	2.13±0.10	26.7±1.2	5.09	8.72	N
+31:3330B*	1.61±0.41	1.74±0.40	1.35±0.42	1.57±0.24	2.51±0.82	23.1±2.8	5.57	9.81	N
G 205-35	1.33±0.41	1.10±0.75	1.86±0.42	1.49±0.27	···	19.8±2.6	6.88	11.93	Y
R 145*	0.46±0.41	0.43±0.40	0.47±0.42	0.45±0.24	0.28±0.06	11.5±0.3	6.41	10.97	Y
229- 30	0.68±0.41	0.80±0.22	0.65±0.31	0.72±0.16	0.75±0.02	14.1±0.2	9.52	17.48	Y
141- 1	3.40±0.41	3.12±0.40	3.64±0.42	3.38±0.24	1.54±0.06	23.3±0.6	8.38	13.29	N
G 205-38	1.63±0.41	1.37±0.40	1.72±0.42	1.57±0.24	···	20.6±2.7	6.37	10.96	?
G 205-40	2.15±0.41	1.33±0.22	1.86±0.70	1.66±0.19	···	21.5±2.8	8.04	13.41	?+
G 205-47	1.45±0.41	1.75±0.75	0.95±0.70	1.39±0.32	···	19.0±2.6	7.35	12.56	Y
G 205-28	2.12±0.41	2.15±0.40	2.13±0.42	2.13±0.24	···	26.7±3.4	6.46	11.15	N
336- 4	0.52±0.41	0.58±0.40	0.59±0.42	0.56±0.24	···	13.0±1.7	6.50	11.24	Y
G 207-22	1.55±0.41	1.38±0.40	1.55±0.42	1.49±0.24	1.17±0.11	17.8±0.8	6.34	10.76	Y
W 1108	1.54±0.41	1.39±0.40	1.99±0.42	1.63±0.24	0.71±0.23	16.7±1.4	6.59	11.08	Y
693- 14	3.58±0.41	···	···	3.58±0.41	···	51.9±9.0	4.37	7.09	N
869- 42	1.32±0.41	···	···	1.32±0.41	1.74±0.09	21.5±0.9	4.97	8.83	N
+58:2015B*	2.59±0.41	2.41±0.40	2.47±0.42	2.49±0.24	···	31.5±4.1	6.42	11.02	N
-20:5833*	0.96±0.41	1.09±0.40	1.10±0.42	1.05±0.24	0.98±0.05	15.8±0.4	4.70	7.91	Y
870- 45	1.44±0.41	···	···	1.44±0.41	···	19.4±3.4	7.92	13.54	Y
R 754	2.17±0.41	···	···	2.17±0.41	2.13±0.16	26.8±1.7	5.32	9.16	N
634- 22	2.50±0.41	···	···	2.50±0.41	2.15±0.16	28.1±1.9	5.31	8.91	N
-28:16676*	0.52±0.41	0.53±0.40	0.71±0.42	0.59±0.24	0.54±0.30	13.0±1.2	6.30	10.91	Y
W 1351	1.79±0.41	1.85±0.40	1.55±0.42	1.73±0.24	···	22.2±2.9	5.63	9.71	?
-32:16135A	-3.55±0.41	-2.51±0.22	-4.41±0.31	-3.36±0.16	0.05±0.11	6.8±0.3	5.78	11.85	Y*
-32:16135B	-3.32±0.41	-2.52±0.22	-4.32±0.31	-3.28±0.16	0.05±0.11	6.8±0.3	5.86	11.82	Y*
G 144-39	1.48±0.41	1.63±0.40	0.49±0.70	1.32±0.27	2.63±0.14	27.8±1.5	6.18	11.15	N
W 896	0.59±0.41	0.72±0.40	0.86±0.42	0.72±0.24	1.54±0.37	16.5±1.7	5.80	10.39	Y
G 25-10	3.31±0.41	···	···	3.31±0.41	···	45.9±7.9	5.24	9.03	N
-33:15343*	1.51±0.41	1.70±0.40	1.64±0.42	1.62±0.24	1.55±0.08	20.6±0.7	4.63	7.76	?
+13:4614	2.87±0.41	3.12±0.40	2.60±0.42	2.87±0.24	3.55±0.26	44.3±3.8	4.22	7.23	N
341- 14*	1.39±0.41	1.46±0.40	1.90±0.42	1.58±0.24	···	20.7±2.7	6.86	11.91	?
R 776	0.56±0.41	0.73±0.40	-0.26±0.70	0.44±0.27	···	12.3±1.6	7.18	12.24	Y
697- 49	2.77±0.41	···	···	2.77±0.41	2.87±0.17	37.0±2.6	4.29	6.99	N
757-260	3.55±0.41	···	···	3.55±0.41	···	51.4±8.9	5.33	9.21	N
286- 3	1.86±0.41	1.77±0.40	1.53±0.42	1.72±0.24	2.36±0.31	25.5±2.4	5.20	9.11	N
873- 49	1.37±0.41	···	···	1.37±0.41	···	18.8±3.2	6.28	10.84	Y
R 775	-1.30±0.41	-1.14±0.40	-1.30±0.42	-1.24±0.24	-0.86±0.03	6.6±0.1	6.33	11.20	Y*
874- 10	1.18±0.41	1.47±0.40	0.50±0.70	1.14±0.27	0.67±0.39	15.4±1.6	7.39	12.51	Y

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
G 126-30	1.19±0.41	0.91±0.22	0.71±0.31	0.91±0.16	···	15.2±2.0	8.24	13.90	Y
G 126-31	1.04±0.41	1.21±0.75	0.63±0.70	0.97±0.32	···	15.6±2.1	7.43	12.68	Y
W 937	1.79±0.41	···	···	1.79±0.41	2.37±1.96	23.9±4.1	6.27	10.91	?
G126-35	2.99±0.41	3.10±0.40	3.03±0.42	3.04±0.24	3.61±0.28	46.4±4.2	4.32	7.43	N
LHS 3713	1.76±0.41	1.63±0.40	1.95±0.42	1.78±0.24	1.31±0.18	19.8±1.4	6.18	10.50	Y
R 209	2.38±0.41	2.46±0.40	2.52±0.42	2.45±0.24	2.35±0.16	30.0±1.9	4.96	8.46	N
518- 58	0.75±0.41	0.34±0.22	0.77±0.70	0.53±0.19	···	12.8±1.6	7.92	13.40	Y
639- 1	1.15±0.41	0.54±0.22	1.30±0.70	0.85±0.19	0.63±0.09	13.7±0.6	8.36	13.97	Y
G 215-30	1.80±0.41	1.70±0.40	···	···	1.75±0.3	22.4±3.0	11.01	6.40	Y
R 265	0.03±0.41	0.09±0.40	0.22±0.42	0.11±0.24	1.08±0.08	15.0±0.5	5.28	9.76	Y
819- 17	0.49±0.41	0.65±0.40	0.65±0.42	0.60±0.24	0.53±0.35	13.0±1.3	6.62	11.45	Y
519- 60	2.96±0.41	···	···	2.96±0.41	···	39.1±6.8	4.70	7.87	N
USNO 571	1.36±0.41	···	···	1.36±0.41	1.78±0.16	21.5±1.4	6.20	10.91	N
819- 52	0.48±0.41	-0.12±0.22	0.38±0.70	0.14±0.19	0.09±0.09	10.5±0.4	8.03	13.47	Y
984- 2	1.98±0.41	2.17±0.40	1.24±0.70	1.89±0.27	···	23.9±3.1	7.21	12.31	N
931- 40	1.68±0.41	2.36±0.75	0.58±0.31	1.30±0.24	···	18.2±2.3	8.05	13.50	Y
820- 12	-1.05±0.41	-1.05±0.22	-1.33±0.31	-1.14±0.16	-0.64±0.08	7.1±0.2	8.05	14.01	Y*
W 1225	-0.36±0.41	-0.43±0.40	-0.05±0.42	-0.28±0.24	1.03±0.38	11.5±1.2	5.75	10.40	Y
876- 25*	1.44±0.41	···	···	1.44±0.41	1.95±0.45	21.7±2.8	5.85	10.29	?+
876- 26	0.99±0.41	···	···	0.99±0.41	1.95±0.45	19.4±2.5	5.90	10.53	Y+
460- 60	1.74±0.41	1.80±0.40	1.65±0.42	1.73±0.24	1.77±0.09	22.5±0.9	5.20	8.97	N
760- 3	0.43±0.41	0.10±0.22	0.58±0.31	0.33±0.16	0.26±0.12	11.4±0.6	9.57	16.98	Y
G 215-50	0.82±0.41	0.61±0.75	0.20±0.70	0.59±0.32	0.70±0.09	13.7±0.5	7.38	12.56	Y
876- 34	0.87±0.41	···	···	0.87±0.41	0.97±0.09	15.5±0.6	5.92	10.30	Y+
344- 27	2.41±0.41	2.29±0.40	2.47±0.42	2.39±0.24	···	30.1±3.9	5.73	9.91	N
-44:15006*	2.82±0.41	···	···	2.82±0.41	2.63±0.25	34.7±3.2	4.68	7.64	N
G 189-32	2.22±0.41	2.33±0.40	2.46±0.42	2.34±0.24	···	29.4±3.8	6.66	11.54	N
460- 56	0.85±0.41	1.02±0.40	0.84±0.42	0.90±0.24	1.63±0.14	19.0±1.1	5.77	10.36	Y
984- 91	-0.19±0.41	···	···	-0.19±0.41	1.87±0.18	17.7±1.3	5.67	10.76	Y+
+11:4875B*	1.21±0.41	···	···	1.21±0.41	1.50±0.52	18.5±2.6	5.93	10.36	Y
+43:4305*	-1.67±0.41	-1.50±0.40	-2.61±0.70	-1.81±0.27	-1.48±0.02	5.0±0.1	6.79	11.79	Y*
344- 44	1.79±0.41	1.72±0.40	2.11±0.42	1.87±0.24	···	23.7±3.1	6.37	11.05	N
932- 83*	0.74±0.41	···	···	0.74±0.41	···	14.1±2.4	7.71	13.19	Y+
344- 47	1.70±0.41	1.58±0.40	1.84±0.42	1.70±0.24	···	21.9±2.8	6.28	10.85	?
Ox+31:70565	0.32±0.41	0.42±0.40	0.52±0.42	0.42±0.24	0.77±0.09	13.7±0.5	6.19	10.94	Y
933- 25*	10.07±0.41	···	···	10.07±0.41	2.52±0.23	109.7±9.6	5.11	6.51	N
985-130	2.89±0.41	···	···	2.89±0.41	2.74±0.17	36.1±2.5	4.82	7.99	N

Table 4—Continued

NLTT	(m-M)$_{V-K}$	(m-M)$_{V-I}$	(m-M)$_{I-J}$	(m-M)$_{ph}$	(m-M)$_{\pi}$	d$_f$(pc)	M$_K$	M$_V$	20pc?
Gl 888AB	2.86±0.41	···	···	2.86±0.41	3.78±1.24	41.5±6.8	4.66	8.08	N
642- 82	1.07±0.41	···	···	1.07±0.41	···	16.4±2.8	6.73	11.59	Y
462- 19	0.32±0.41	···	···	0.32±0.41	···	11.6±2.0	6.85	11.78	Y
+45:4188	1.69±0.41	1.83±0.40	1.58±0.42	1.70±0.24	1.93±0.10	23.6±1.0	5.16	9.03	N
G 216-39	2.96±0.41	2.89±0.40	3.36±0.42	3.07±0.24	···	41.1±5.3	5.71	9.96	N
R 243	2.28±0.41	···	···	2.28±0.41	···	28.6±4.9	4.83	8.17	N
462- 27	-0.71±0.41	-0.36±0.40	-1.31±0.70	-0.71±0.27	0.15±0.09	9.8±0.4	6.54	11.69	Y*
+19:5093B*	-1.21±0.41	···	···	-1.21±0.41	2.87±0.07	28.1±0.9	2.90	7.52	N
522- 49	1.81±0.41	1.74±0.40	1.98±0.42	1.84±0.24	2.08±1.06	23.9±3.0	6.19	10.76	N
- 2:5958*	2.48±0.41	···	···	2.48±0.41	2.59±0.14	32.6±1.9	4.63	7.81	N
-17:6768*	-0.43±0.41	···	···	-0.43±0.41	0.23±0.18	10.1±0.8	5.80	10.36	Y
G 171-5	1.80±0.41	1.80±0.40	2.01±0.42	1.87±0.24	2.18±0.14	26.0±1.5	5.18	9.17	N
463- 23	0.63±0.41	0.54±0.22	0.66±0.31	0.60±0.16	···	13.2±1.7	8.99	15.55	Y+
R 248	-2.91±0.41	-2.60±0.22	-2.96±0.31	-2.79±0.16	-2.50±0.01	3.2±0.0	8.44	14.86	Y*
G 68-37	1.14±0.41	1.36±0.40	0.37±0.70	1.05±0.27	1.71±0.20	19.5±1.4	6.78	11.86	Y
935- 18	1.33±0.41	1.46±0.40	1.29±0.42	1.36±0.24	···	18.7±2.4	6.38	11.04	Y
403- 16	1.99±0.41	2.17±0.40	1.16±0.70	1.88±0.27	···	23.7±3.1	7.16	12.21	N
763- 12	0.66±0.41	1.18±0.40	0.32±0.70	0.79±0.27	···	14.4±1.9	7.25	12.52	Y
G 31-15	2.12±0.41	2.39±0.40	2.46±0.42	2.32±0.24	···	29.2±3.8	6.62	11.53	N
- 6:6318*	0.66±0.41	0.66±0.40	0.81±0.42	0.71±0.24	0.95±0.35	14.6±1.5	5.90	10.33	Y
704- 15	0.65±0.41	0.94±0.40	-0.02±0.70	0.61±0.27	···	13.3±1.7	7.19	12.32	Y
291- 34*	1.31±0.41	1.35±0.40	1.43±0.42	1.36±0.24	···	18.7±2.4	6.52	11.28	Y
G 131-5	3.13±0.41	3.21±0.40	3.15±0.42	3.16±0.24	···	42.9±5.5	6.62	11.43	N
+45:4378	0.56±0.41	0.63±0.40	0.44±0.42	0.55±0.24	1.20±0.11	16.0±0.7	4.79	8.60	Y
149- 14	1.29±0.41	···	···	1.29±0.41	1.42±0.04	19.2±0.3	8.50	14.69	Y

Note. — Column 1 lists the designation from the NLTT catalogue, adding Lowell Observatory identifications;
Column 2 gives the distance modulus derived from the (V-K$_S$) photometric parallax; Columns 3 and 4 list distance moduli for stars with I-band photometry, based on (V-I) and (I-J) respectively; Column 5 gives the weighted average of the photometric parallax measurements; Column 6 lists the distance modulus indicated by the trigonometric parallax;
Column 7 gives our final estimate of the distance, based on a weighted average of the photometric average and the trigonometric result;
Columns 8 and 9 list the resultant absolute magnitudes at K and V, respectively;
Column 10 indicates whether the star lies within our distance limit of 20 parsecs (Y), within 1σ of the boundary (?) or beyond the limit (N). A (+) indicates that the star is not included in the pCNS3.

Table 5

Comparison between photometric and trigonometric distance moduli

$\langle M_V \rangle$	$\Delta_{\pi 1}$	σ	n_1	$\Delta_{\pi 2}$	σ	n_2	$\Delta_{\pi 3}$	σ	n_3	$\Delta_{\pi 4}$	σ	n_4
7.0	0.239	0.289	19	0.065	0.279	9	0.286	0.465	9	0.225	0.302	19
9.0	0.178	0.431	87	0.179	0.423	70	0.172	0.499	70	0.174	0.415	87
11.0	0.075	0.542	83	0.075	0.417	75	0.089	0.758	74	0.082	0.518	83
13.0	-0.211	0.608	36	0.032	0.667	34	0.318	0.524	33	-0.013	0.636	36
15.0	0.046	0.413	15	0.135	0.335	13	0.159	0.407	13	0.092	0.350	15
17.0	-0.128	0.150	6	0.016	0.082	5	-0.090	0.220	5	-0.083	0.120	6

Mean residuals, as a function of absolute magnitude, between photometric and trigonometric parallax estimates for stars with trigonometric parallaxes accurate to better than 10%. The residuals are listed as differences in distance modulus in the sense

$$\Delta \ = \ \Sigma((m-M)_\pi - (m-M)_{phot})/n$$

where (m-M)$_{phot}$ is derived from the photometric parallax; σ is the dispersion about the mean; n is number of stars contributing to each bin. The table lists comparisons against the individual photometric parallaxes ($\Delta_{\pi 1}$ against (m-M)$_{V-K}$, $\Delta_{\pi 2}$ against (m-M)$_{V-I}$ and $\Delta_{\pi 3}$ against (m-M)$_{I-J}$), and against the weighted average of the photometric estimates ($\Delta_{\pi 4}$).

Table 6

Spectroscopically-confirmed ultracool dwarfs

NLTT	α (2000)	δ	m_r	I/Sp.	J	H	K_S	d (pc)	ref	M_K
368-128	09 00 23.5	21 50 05	15.5	M6.5	9.423	8.856	8.429	5.2 ± 1	1	9.85
860- 46	15 53 57.1	-23 11 52	16.3	13.56	11.570	10.957	10.636	22.2 ± 4	2	8.90
213- 67	10 47 12.6	40 26 43	16.3		11.417	10.777	10.400	12.7 ± 2.5	3	9.88
349- 25	00 27 55.9	22 19 32	17.0	M8	10.608	9.970	9.561	8.4 ± 1.7	4	9.93
315- 53	10 16 34.7	27 51 49	17.4	M7.5	11.951	11.294	10.946	16.5 ± 3	4	9.86
944- 20	03 39 35.2	-35 25 44	17.5	M9.5	10.748	10.017	9.525	5.0 ± 0.1	5	8.02
356-770	03 30 05.0	24 05 28	18.1	M7	12.357	11.745	11.361	20.2 ± 4	4	9.83
213- 68	10 47 13.8	40 26 49	18.7		12.445	11.705	11.277	16.3 ± 3	3	10.22
413- 53	03 50 57.3	18 18 6	19.2	M9	12.951	12.222	11.763	19.9 ± 4.0	4	10.27

Column 5 lists either Cousins I-band photometry or the spectral type.

References:

1. Scholz *et al.* (2001), LHS 2090 - distance from (J-K_S)
2. Ardila *et al.* (2001), UScoCTIO 4 - distance from (I-J)
3. Gizis *et al.* (1999) - distance from (J-K_S)
4. Gizis *et al.* (2000) - distance from (J-K_S); LP 315-53 = LHS 2243
5. Tinney (1996, 1998) - distance from trigonometric parallax

Table 7
Photometrically-selected ultracool dwarfs

NLTT	LHS	α (2000)	δ	m_r	J	H	K_S	M_K	d_{J-K} (pc)	d_f
G118-43		10 15 06.9	31 25 11	12.9	9.410	8.780	8.410	9.84	5.2 ± 1.0	17.7
G180-11		15 55 31.8	35 12 02	12.9	8.999	8.290	7.986	9.87	4.2 ± 0.8	13.3
G139-3		16 58 25.3	13 58 10	13.5	8.859	8.284	7.737	10.12	3.3 ± 0.7	13.6
G199-16	6234	12 29 09.5	62 39 38	14.2	10.337	9.775	9.315	9.89	7.7 ± 1.5	
245- 10	1378	02 17 09.9	35 26 33	14.7	9.965	9.355	8.974	9.82	6.8 ± 1.4	10.2
645- 53		00 35 44.1	-05 41 10	14.9	10.717	10.084	9.716	9.85	9.4 ± 1.9	
714- 37		04 10 48.0	-12 51 42	15.1	11.060	10.469	10.015	9.94	10.3 ± 2.1	
649- 72	1363	02 14 12.5	-03 57 43	15.5	10.472	9.839	9.466	9.86	8.4 ± 1.7	
264- 45		11 22 42.7	37 55 48	16.0	11.302	10.656	10.305	9.84	12.4 ± 2.5	
740- 20		14 31 15.6	-13 18 24	16.1	11.136	10.496	10.121	9.88	11.2 ± 2.2	
423- 31		07 52 23.9	16 12 15	16.3	10.831	10.192	9.819	9.87	9.8 ± 2.0	
655- 48		04 40 23.2	-05 30 08	16.4	10.681	9.985	9.557	10.12	7.7 ± 1.5	
914- 54	3003	14 56 38.3	-28 09 47	16.4	9.957	9.327	8.917	9.93	6.3 ± 1.3	6.6
651- 17	1450	02 50 02.3	-08 08 41	16.5	11.878	11.226	10.850	9.91	15.4 ± 3.1	
593- 68	1604	03 51 00.0	00 52 44	16.5	11.262	10.592	10.191	10.00	10.9 ± 2.2	14.4
800- 58		14 25 13.3	-16 24 56	16.6	11.469	10.918	10.478	9.82	13.5 ± 2.7	
698- 2		21 32 29.7	-05 11 58	16.6	11.439	10.715	10.385	9.96	12.1 ± 2.4	
763- 3		23 37 38.3	-12 50 27	16.7	11.461	10.851	10.427	9.92	12.6 ± 2.5	
927- 32	3566	20 39 23.8	-29 26 33	16.7	11.346	10.768	10.352	9.83	12.7 ± 2.5	
785- 4		08 24 29.3	-19 37 36	16.8	11.896	11.312	10.905	9.82	16.5 ± 3.3	
985- 98		23 09 14.2	-35 31 59	16.9	12.035	11.351	10.986	9.95	16.1 ± 3.2	
335- 12		18 39 33.0	29 52 16	17.2	10.964	10.381	9.960	9.85	10.5 ± 2.1	
775- 31		04 35 16.1	-16 06 57	17.4	10.396	9.780	9.336	9.98	7.4 ± 1.5	
218- 8	2645	12 53 12.4	40 34 03	17.5	12.177	11.557	11.173	9.85	18.4 ± 3.7	
441- 34	3002	14 56 27.8	17 55 07	17.5	11.931	11.320	10.936	9.83	16.6 ± 3.3	19.4
718- 5		05 35 21.2	-09 31 06	17.5	11.851	11.201	10.814	9.93	15.1 ± 3.0	
220- 13		13 56 41.4	43 42 58	17.5	11.704	11.031	10.634	10.00	13.4 ± 2.7	
229- 30	3406	18 43 22.1	40 40 21	17.5	11.299	10.667	10.269	9.91	11.8 ± 2.4	14.1
789- 23		10 06 31.9	-16 53 26	17.6	12.041	11.421	11.000	9.94	16.3 ± 3.3	
647- 13		01 09 51.1	-03 43 26	17.9	11.695	10.921	10.418	10.47	9.8 ± 2.0	
666- 9	2065	08 53 36.2	-03 29 32	17.9	11.185	10.468	9.972	10.32	8.5 ± 1.7	12.8
763- 38		23 37 14.9	-08 38 08	18.0	12.246	11.603	11.206	9.93	18.0 ± 3.6	
267-299		12 52 17.0	33 57 39	18.1	12.246	11.601	11.239	9.86	18.9 ± 3.8	
429- 12	2215	09 59 56.0	20 02 34	18.1	12.244	11.615	11.196	9.95	17.7 ± 3.5	
423- 14	1937	07 41 06.8	17 38 45	18.1	11.995	11.362	10.969	9.90	16.3 ± 3.3	

Table 6 (contd.)

Photometrically-selected ultracool dwarfs

NLTT	LHS	α (2000)	δ	m_r	J	H	K_S	M_K	d_{J-K} (pc)	d_f
658-106		05 37 23.3	-08 16 05	18.2	12.305	11.675	11.304	9.85	19.6 $\pm$ 3.9	
888- 18		03 31 30.2	-30 42 38	18.2	11.371	10.699	10.276	10.06	11.1 $\pm$ 2.2	
890- 2		04 13 39.8	-27 04 29	18.4	12.214	11.578	11.190	9.90	18.1 $\pm$ 3.6	
859- 1		15 04 16.2	-23 55 56	18.4	12.025	11.389	11.031	9.83	17.4 $\pm$ 3.5	
754- 14		20 04 18.4	-12 20 31	18.9	12.827	12.153	11.829	9.84	25.0 $\pm$ 5.0	
695-351		20 41 41.0	-03 33 53	19.0	12.528	11.882	11.504	9.90	21.0 $\pm$ 4.2	
649- 93		02 18 57.8	-06 17 49	19.2	12.920	12.186	11.860	9.98	23.8 $\pm$ 4.8	

Column 10 lists the distance based on the (M_K, (J-K_S)) calibration given in the text; Column 11 lists d_f from Table 2 for stars with optical photometry.

Fig. 1.— Aitoff projections, centred on ($\alpha = 12$ hours, $\delta = 0^o$), showing the distribution of NLTT stars on the celestial sphere; grid lines are at Right Ascension 4, 8, 12, 16 and 20 hours. The transition from the Palomar Schmidt survey to the Bruce proper motion data at $\delta = -33^o$ is clearly evident at both intermediate and faint magnitudes, as is the location of the Galactic Plane.

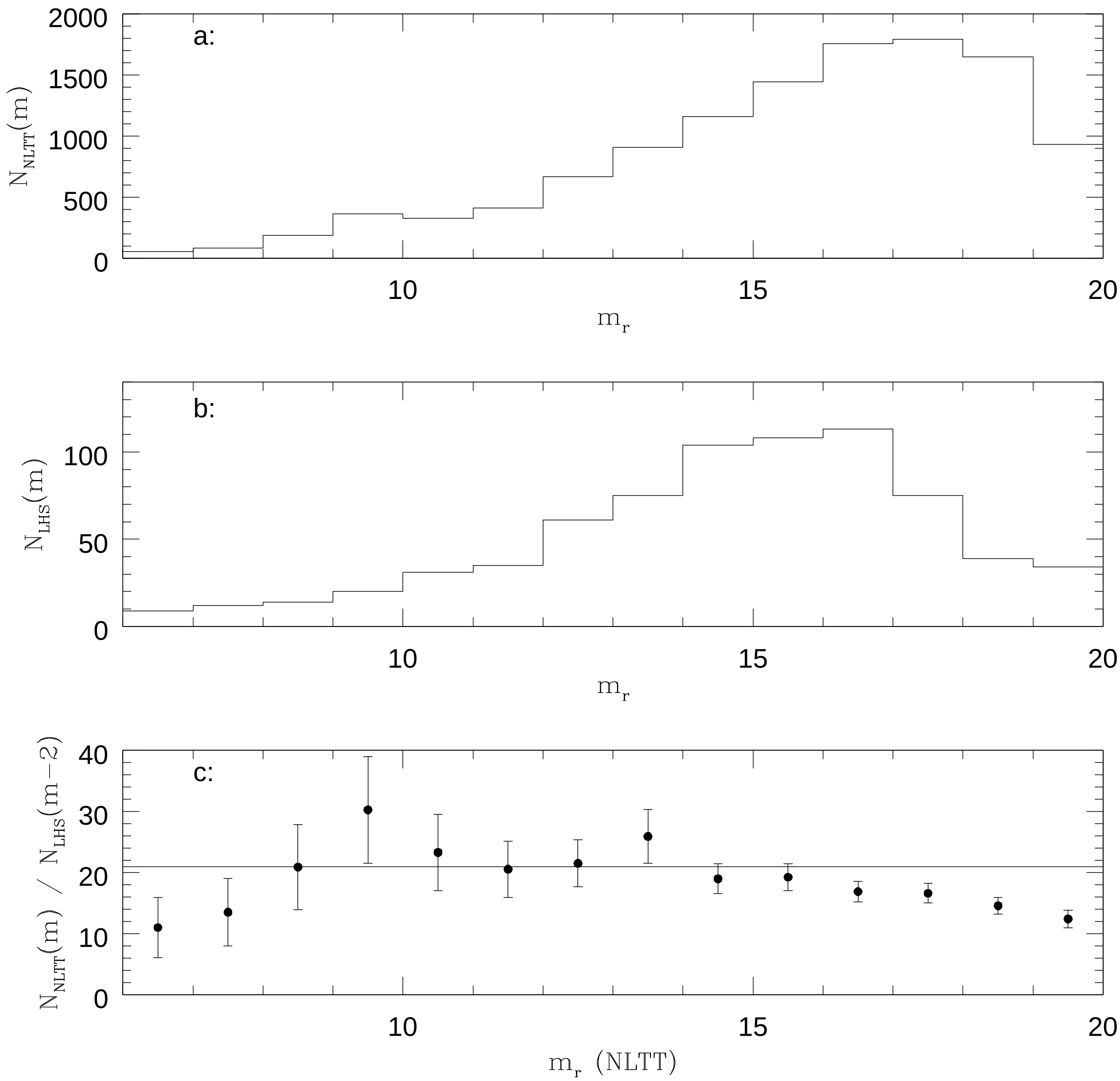


Fig. 2.— Number counts at high galactic latitude from a: the NLTT survey, and b: the LHS survey. Both datasets are drawn from ($10 < \alpha < 16$ hours; $-20^o < \delta < +50^o$). c: the ratio between NLTT and LHS number counts, making allowance for the different sampling volumes as described in the text.

Fig. 3.— Aitoff projections, centred on ($\alpha = 12$ hours, $\delta = 0^o$), for NLTT stars in the area covered by the 2MASS second incremental release (47% of the sky), excluding regions within 10^o of the Plane. The left-hand panels plot the distribution of bright ($m_r \leq 14$) and faint NLTT stars with a 2MASS counterpart within $10''$; the righthand panels plot the distribution of bright and faint NLTT stars which lie within the same region on the sky, but lack close ($\Delta < 10''$) 2MASS counterparts. It is clear that the latter distribution is not random.

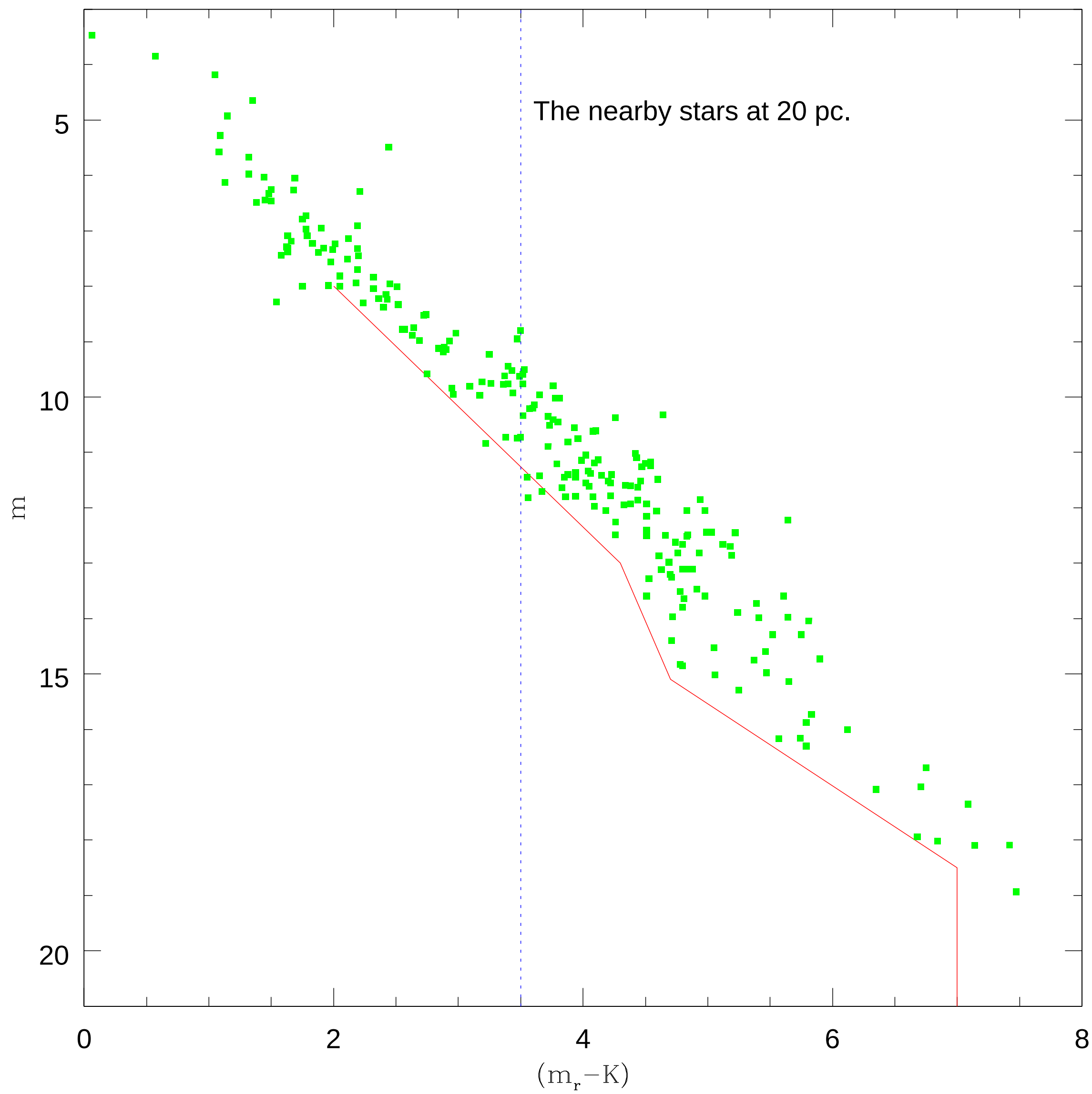


Fig. 4.— Nearby-star selection in the $(m_r, (m_r, K_s))$ plane. The solid points plot data for known nearby stars with accurate trigonometric parallax measurements, adjusting the magnitudes to a distance of 20 parsecs. The solid line underlying the main sequence outlines the selection criteria described in the test.

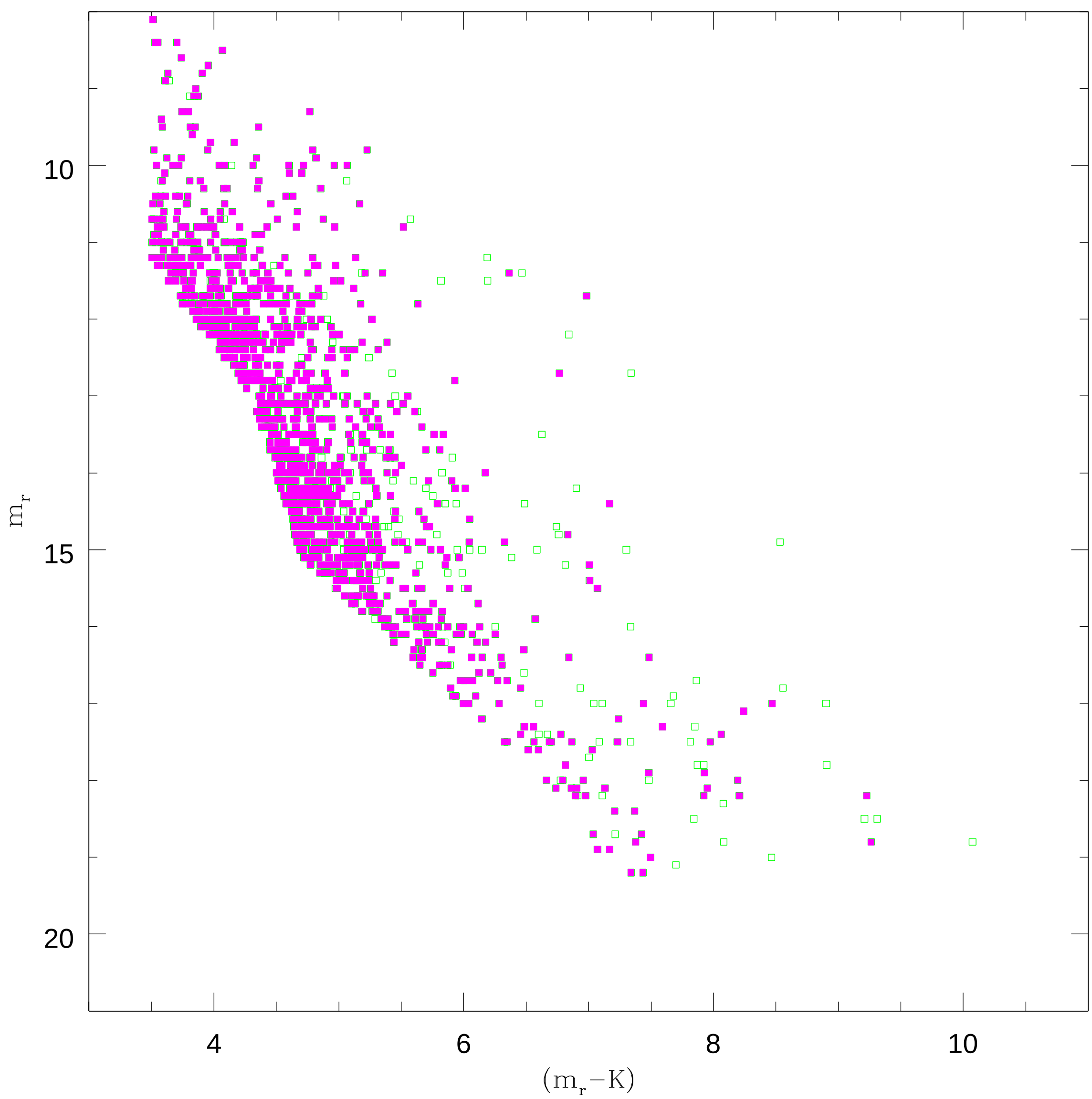
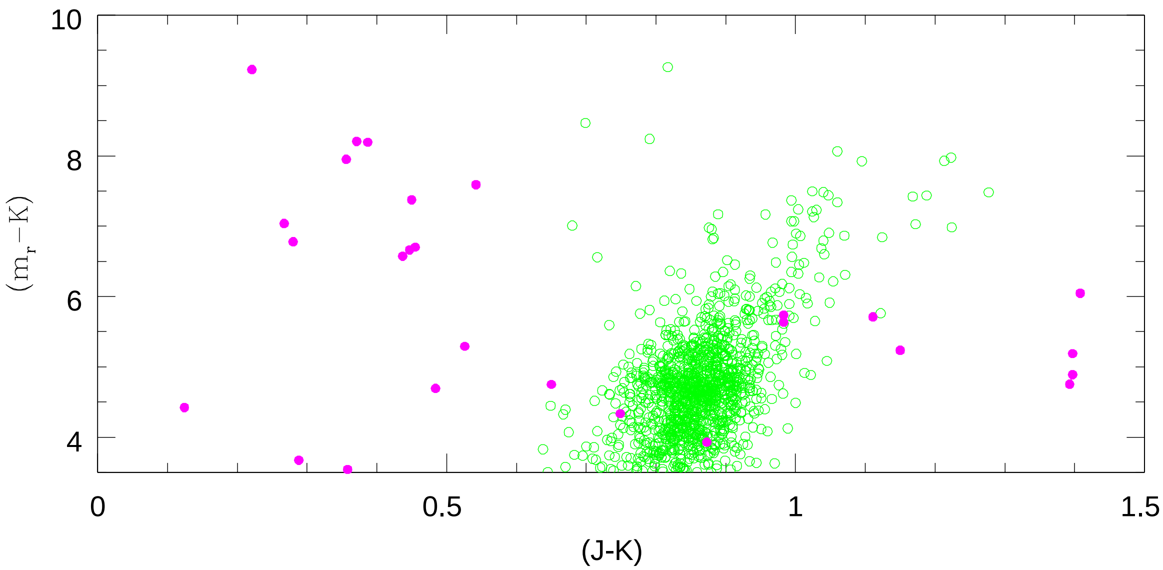


Fig. 5.— The $(m_r, (m_r - K_s))$ colour-magnitude diagram for the NLTT stars in our primary sample. Open squares identify objects which prove to be mismatches between components in cpm binary systems.



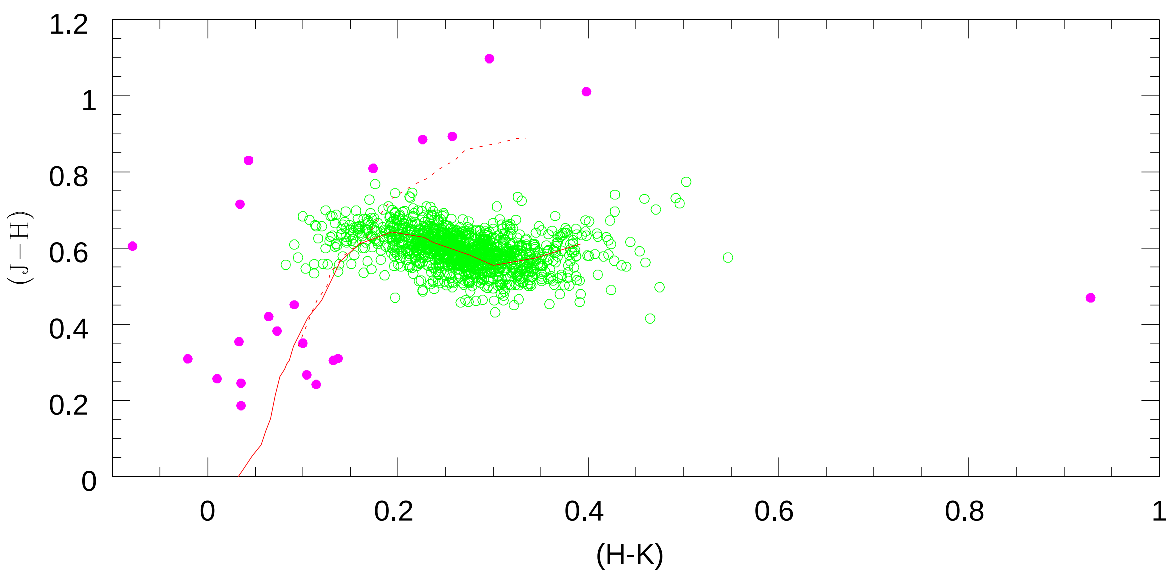


Fig. 6.— The (($m_r - K_s$), (J-K$_s$)) and ((J-H), (H-K$_s$)) two-colour diagrams for the 1275-source NLTT sample. The solid line on the latter diagram marks the mean main-sequence relation and the dotted line the giant star distribution, both taken from Bessell & Brett (1988), transformed to the 2MASS system using the relations given by Carpenter (2001). Solid points mark 2MASS sources with (J-H)/(H-K) colours inconsistent with those of M dwarf stars. Several of the 28 outliers have colours which lie beyond the limits of these diagrams.

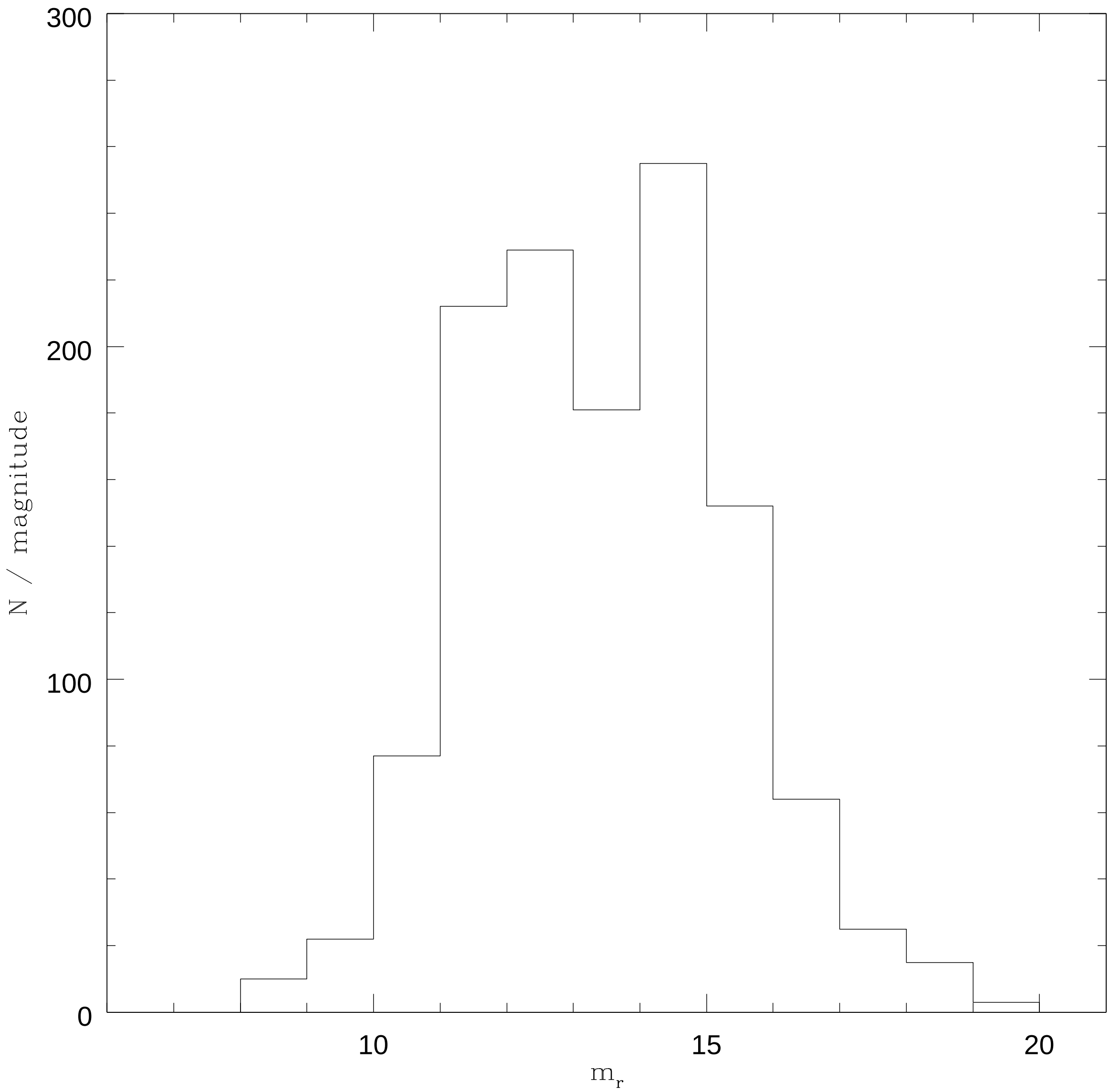


Fig. 7.— The number-magnitude distribution for the 1245 stars in our primary NLTT sample.

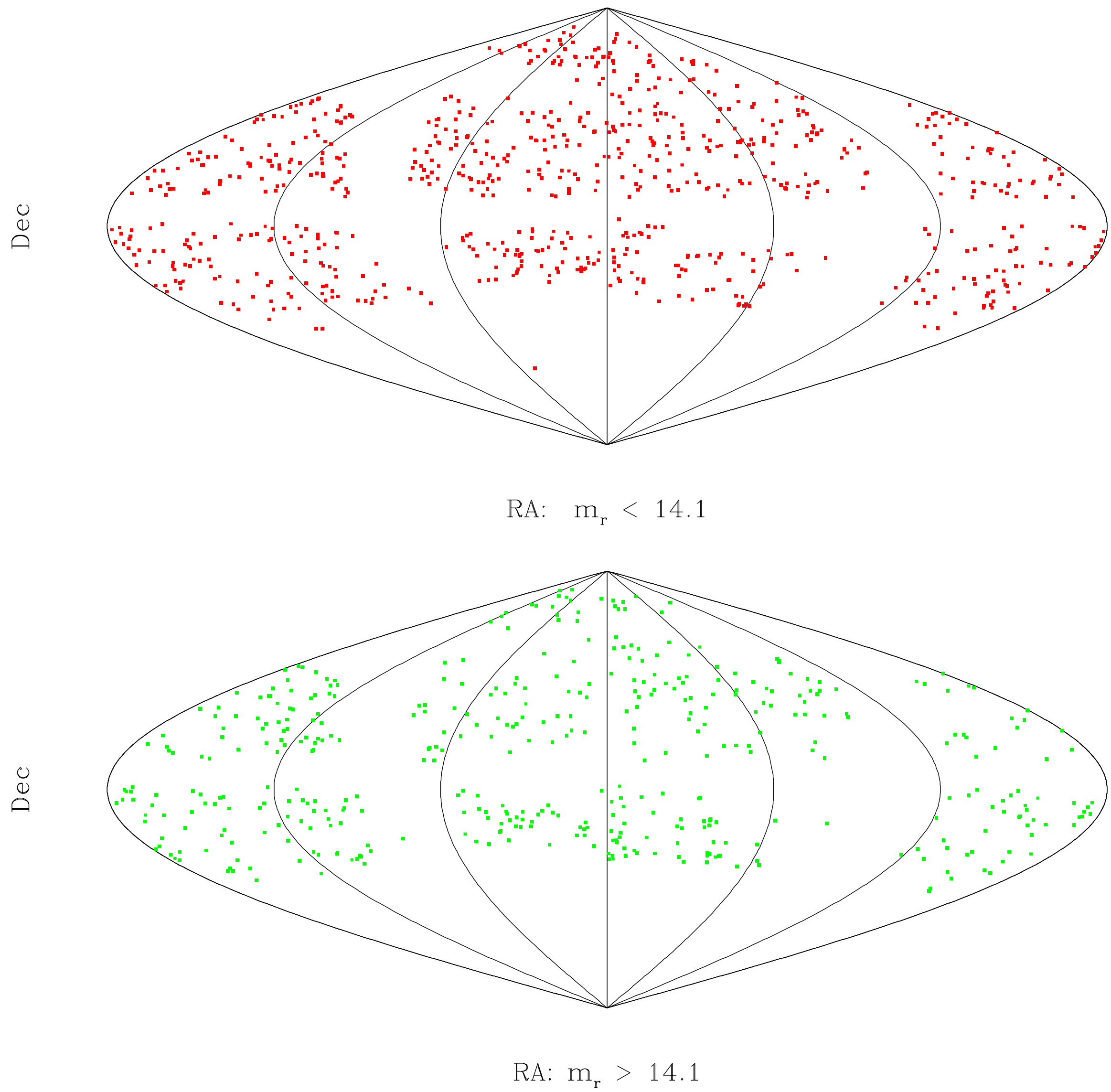


Fig. 8.— Aitoff projections of the (α, δ) distribution of the 1245 stars in our primary NLTT sample.

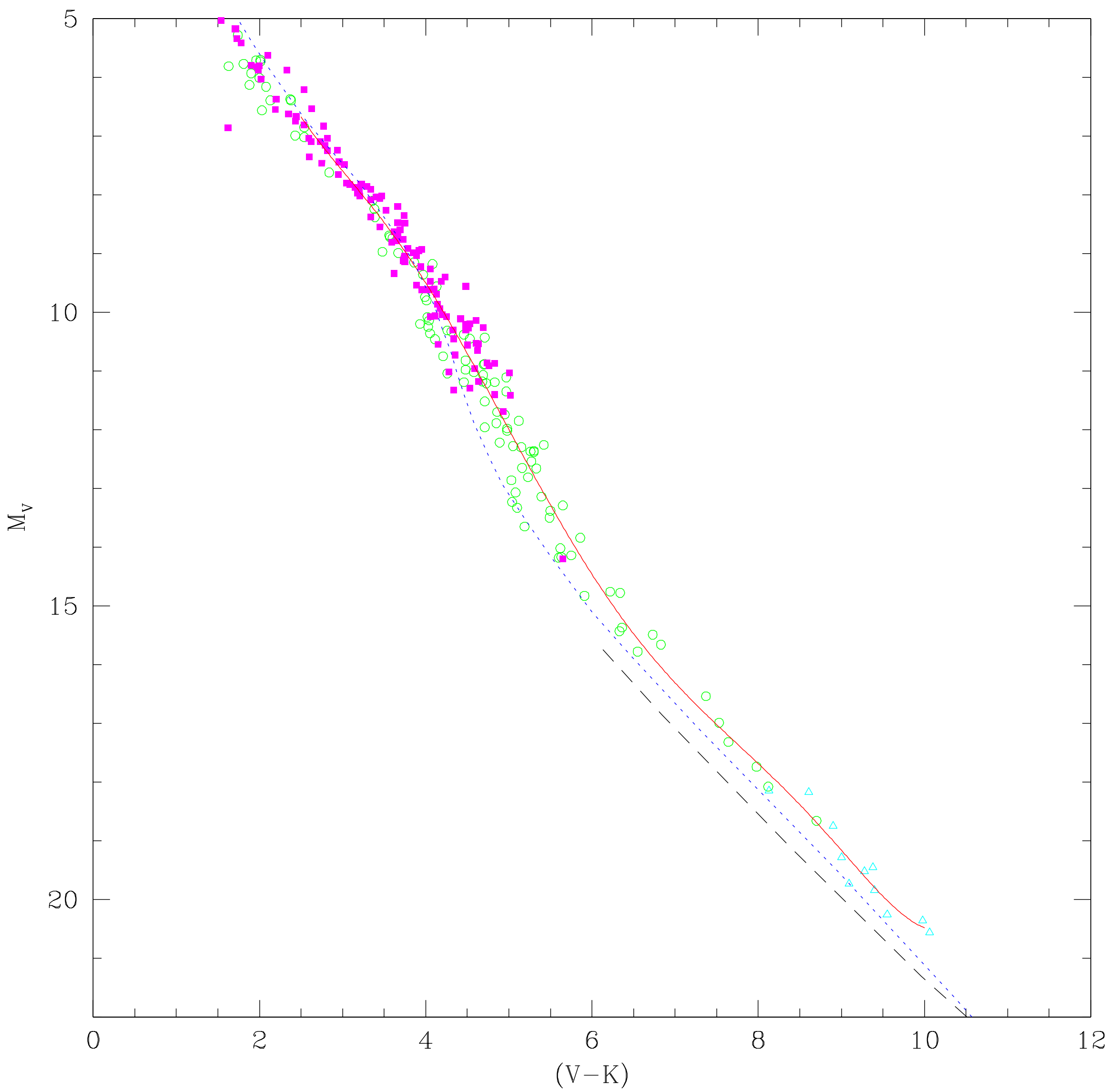


Fig. 9.— The main-sequence in the (M_V, (V-K)) plane: open circles are from Leggett's (1992) compilation, solid squares are CNS2 stars with optical photometry by Bessell (1990) and 2MASS near-infrared data; open triangles are from Dahn *et al.* (2000). The solid line marks the best-fit 6th-order polynomial given in the text. Note the steepening of the main-sequence between $M_V \sim 12$ and ~ 13.5. The dotted line plots a 5-Gyr. isochrone derived from the Baraffe *et al.* (1998) models; the dashed line plots the 5-Gyr. Dusty model ($M < 0.1 M_{\odot}$) from Chabrier *et al.* (2000).

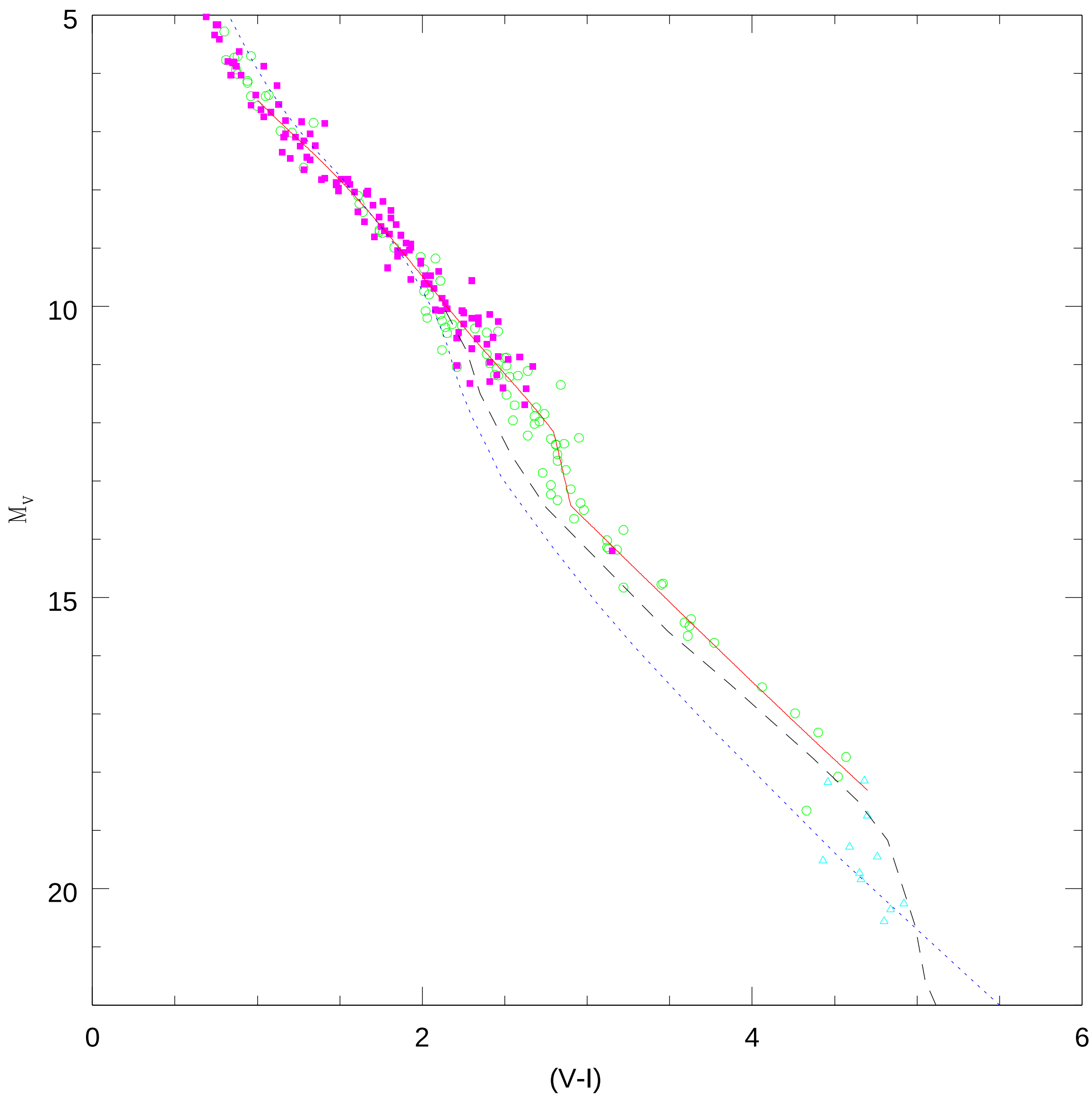


Fig. 10.— The (M_V, (V-I)) relation for nearby stars: the symbols have the same meaning as in Figure 9, and the mean relations are given in the text number-magnitude distribution for the 1245 stars in NLTT Sample 1. The dotted line is the 5-Gyr. isochrone from the Baraffe *et al.* (1998) models, and the dashed line outlines the 5-Gyr. Dusty model (Chabrier *et al.*, 2000). Gilles Chabrier kindly provided the extended isochrone, illustrating the improved agreement with observations.

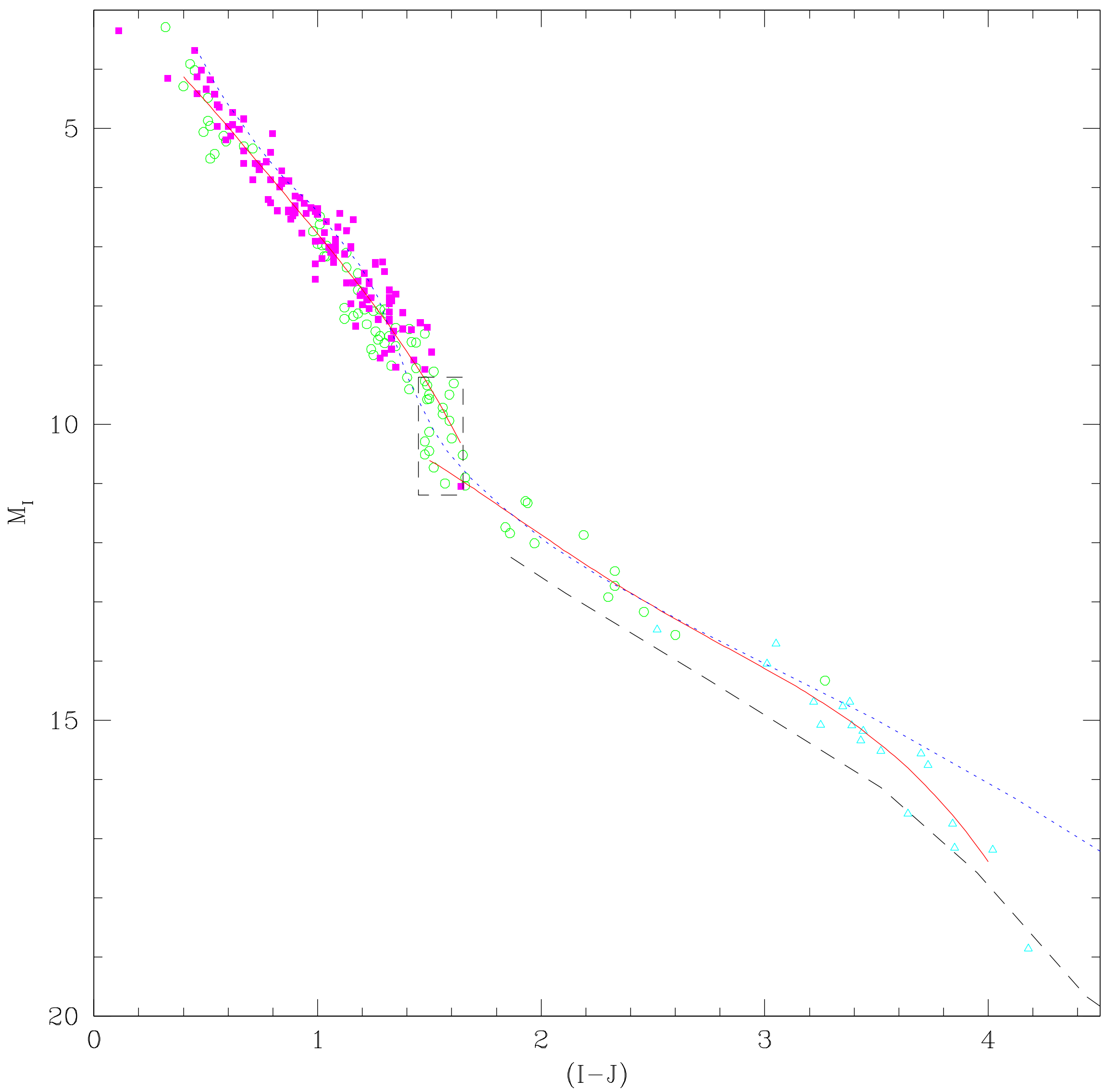


Fig. 11.— The (M_I, (I-J)) relation for nearby stars: the symbols have the same meaning as in Figures 9 and 10, and the fitted relations are given in the text. We have not attempted to fit the main sequence in the boxed region ($1.45 < (I - J) < 1.65$, $9.2 < M_I < 11.2$). The dotted line shows the 5-Gyr isochrone from Baraffe *et al.* (1998), and the dashed line plots the 5-Gyr. Dusty model ($M < 0.1 M_{\odot}$) from Chabrier *et al.* (2000).

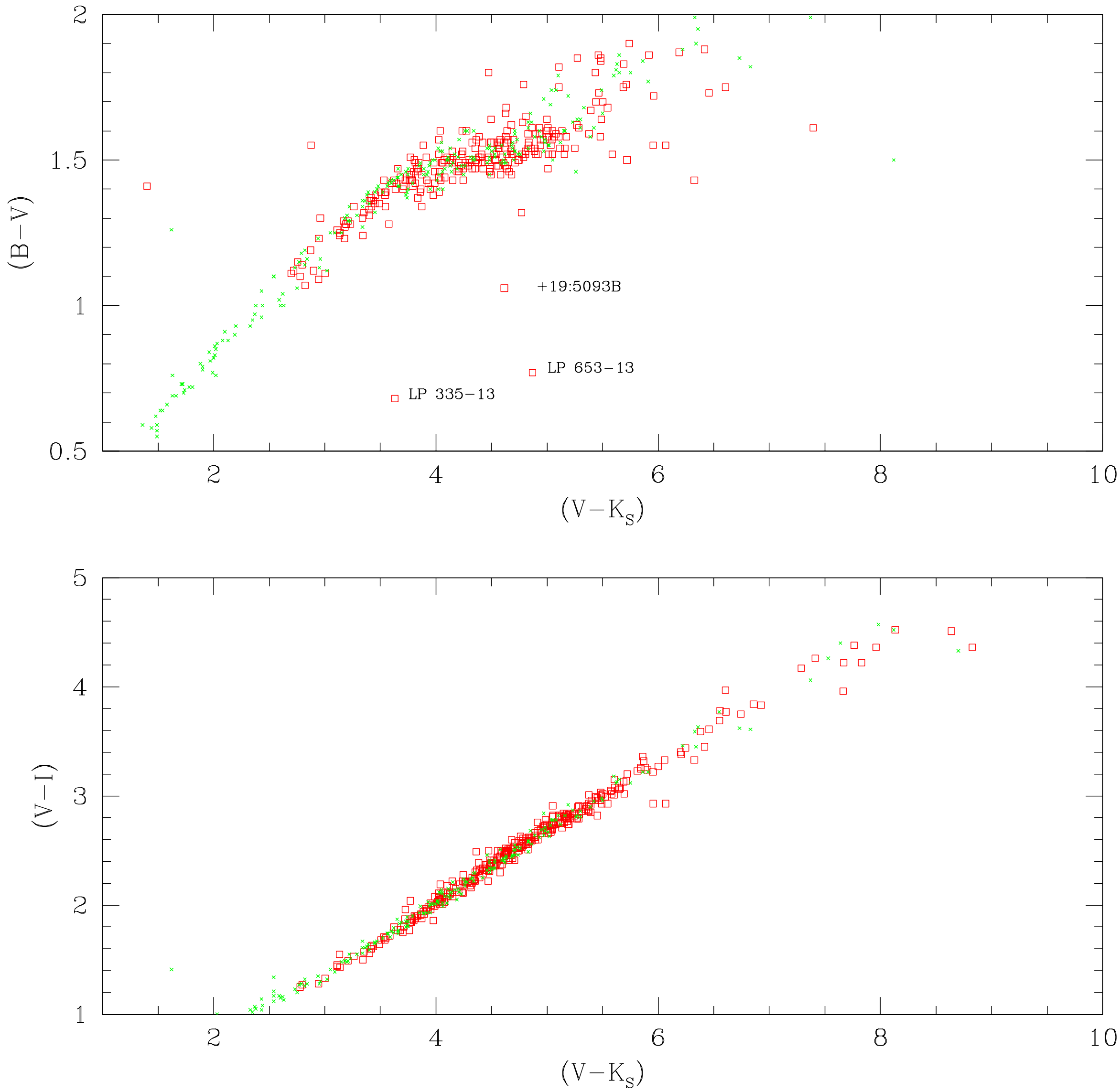


Fig. 12.— The (B-V)/(V-K$_S$) and (V-I)/(V-K$_S$) two-colour diagrams: stars listed in Table 2 are plotted as open squares; crosses mark the two-colour relation defined by nearby main-sequence stars. The outliers are discussed in the text.

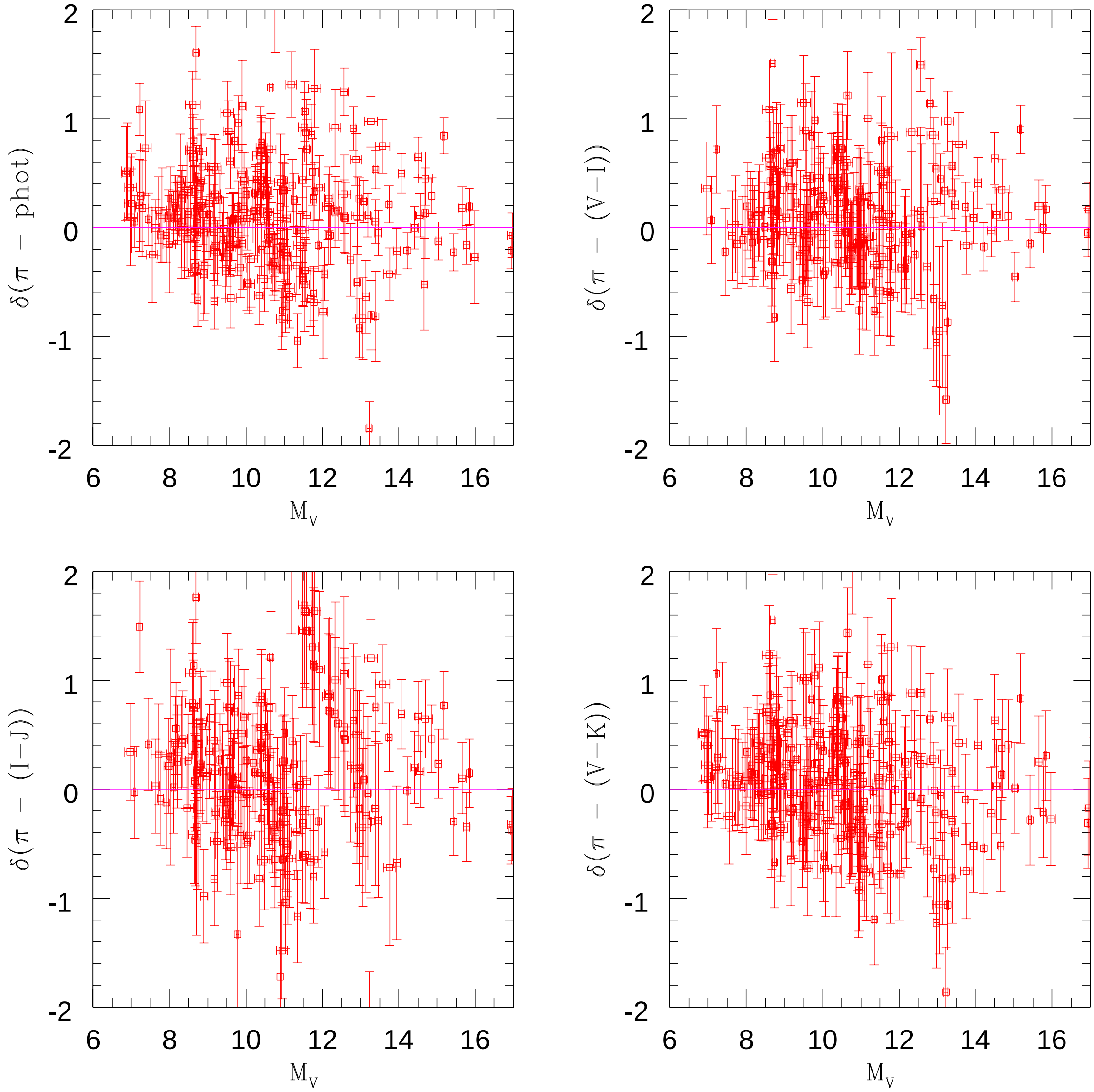


Fig. 13.— Comparison between distance moduli derived from photometric parallaxes and astrometric distance measurements for stars with trigonometric parallaxes measured to an accuracy better than 9%. The mean residuals as a function of absolute magnitude (derived from π_{trig}) are given in Table 4.

This figure "fig3.gif" is available in "gif" format from:

http://arXiv.org/ps/astro-ph/0202459v1